AMERICAN VETERINARY REVIEW,

NOVEMBER, 1892.

EDITORIAL.

VETERINARY EDUCATION.—As one of the evidences of the progress accomplished by veterinary science in the United States, there is probably none which carries more weight than the demand which has arisen of late years for the improvement of the instruction to be obtained in our veterinary colleges.

While the faculties of some of these institutions have appreciated the importance of the subject, and have been gradually improving their curriculum, and also increased the length of their terms of study and of the required attendance upon lectures, some of them have still continued the same line of work which they had inaugurated at the opening of their career; and it is, no doubt, in view of this condition of things, as well as the obligatory imposition that better and more thorough training should be given to our young veterinarians that the amended resolution was passed at the last meeting of the United States Veterinary Medical Association recommending the establishment of the requirement of a three years course of study as an imperative condition of graduation.

Since the passage of this resolution, and its official publication in the REVIEW, we have received a number of letters complimentary of the action of the Association, from which we select one for publication from the pen of our friend, Dr. A. W. Clement, the Vice-President of the Association, which

covers the ground well, and whose views, we have no doubt, will prove thoroughly in accordance with those of all our readers, as well as accordant with the importance of the question at issue.

VETERINARY EDUCATION.

When the United States Veterinary Association, representing the profession in America, adopted an amendment to its by-laws specifying what it considered the minimum requirements which a school should possess to fit men for the practice of veterinary medicine, and demanded that all applicants for membership hereafter shall be graduates of schools possessing such requirements, we may well say that no subject is of greater importance to the profession and to the public than is that of veterinary education.

Any veterinary surgeon who fails to do what he can to make his calling one of which he need not be ashamed, is false to his profession and to himself. We condemn a man to professional ostracism who covers his medicines with the secrecy of his pharmacy. We are much inclined to censure our fellows for patenting a surgical appliance, yet can we expect else from men educated in many of the schools which are being boomed to-day almost from the Atlantic to the Pacific? Certainly not.

"As the twig is bent, the tree is inclined," is a proverb as true in one walk of life as in another. When a body of men, with little or no capital, establish a school, there is a prime consideration, either expressed or implied, of personal gain at the expense of the profession. No man now has any moral or professional right to encourage, directly or indirectly, a veterinary school unless the circumstances under which it is started are so exceptional as to place it, from the beginning, upon a basis distinctly above any now in existence.

The time has passed when it can be said that the demand is such that any sort of a school, no matter what its requirements, should be encouraged. Too much praise cannot be accorded to the pioneers in veterinary education, though for want of encouragement it were impossible for them to improve the curriculum, even to the extent which the teachers themselves considered to be necessary for even an elementary training. Some of us know that the better of the short-term schools were for many years a source of expense to their founders.

We all know that the long term "three-year" schools now in existence are, and always have been, financial failures, and were they to depend upon the receipts from students they would be compelled to close their doors, or go into the "mill business."

Fortunately, the long-term schools now in existence are not wholly dependent upon the fees of students for their maintenance. Never was there a professional school, and especially one in a profession so limited in its usefulness as ours, which was a financial success, that was not, at the same time, a professional failure.

Our duty is very plain in this matter. We should encourage the long-term schools now in existence, and should demand of every new comer that it offer inducements as great, and except from geographical considerations, greater than any now in existence, for without these reasons it is too plainly evident that the

consideration of personal gain is uppermost in the minds of its projectors. If we wish to keep down quackery we must in every way discountenance the influences which tend to lower the dignity of our profession.

We have those among us of whom we may well be proud. One's responsibility is in direct proportion to the prominence of his position. We may pass unnoticed the actions of some members of our profession which would be inexcusable in those who, from their training and associations, should know better.

Let us look this matter fairly in the face and see what can be done to overcome this inordinate desire on the part of many members of our profession to assume the title of "Professor." A. W. CLEMENT.

BALTIMORE, October 14, 1892.

PLEURO-PNEUMONIA IN THE UNITED STATES.—At the last meeting of the United States Veterinary Medical Association, held in Boston, the members were favored with an excellent paper by Dr. Gadsden, of Philadelphia, on the subject of this "bovine disease," which, in consequence of the crowded condition of our pages, we are unable to print in our present issue, which we very much regret. Shortly before the meeting, that most excellent agricultural paper, the *Breeders' Gazette*, published under the interrogative heading of "Why Not Kill that Cow?" an article in which, after giving a brief of the history of the work done, with a view to stamp pleuro-pneumonia out of this country, and with more or less indulgent criticism of the Bureau of Animal Industry and the veterinarians connected with that work, a question was asked of the Secretary of Agriculture for a positive statement of the results actually obtained.

The question has not been passed by unanswered, and in the issue of the same journal for September 28th, the news was promulgated that "that cow has been killed," and that bovine lung plague in the United States was a thing of the past—as appears by the issuing of the following announcement:

PROCLAMATION.

ERADICATION OF PLEURO-PNEUMONIA.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY.

To all whom it may concern: Notice is hereby given that the quarantines heretofore existing in the Counties of Kings and Queens, State of New York, and the Counties of Essex and Hudson, State of New Jersey, for the suppression of pleuro-pneumonia among cattle, are this day removed.

The removal of the aforesaid quarantines completes the dissolving of all quarantines established by this department in the several sections of the United States for the suppression of the above-named disease.

No case of this disease has occurred in the State of Illinois since Dec. 27, 1887, a period of more than four years and eight months.

No case has occurred in the State of Pennsylvania since September 29, 1888, a period of four years within a few days.

No case has occurred in the State of Maryland since Sept. 18, 1889, a period of three years.

No case has occurred in the State of New York since March 25, 1892, a period of more than one year and four months.

No case has occurred in the State of New Jersey since April 30, 1891, a period of six months, and no case has occurred in any other portion of the United States within the past five years.

I do therefore hereby officially declare that the United States is free from the disease known as contagious pleura-pneumonia.

Done at the city of Washington, D. C., this 26th day of September, A. D. 1892. J. M. RUSK, *Sec'y.*

All Americans, and doubtless also all veterinarians, must feel gratified by hearing of such a result, notwithstanding the recent item copied in some of our daily papers from the *St. James Gazette*, containing the statement that an American bullock, slaughtered at Deptford, had been found to have suffered with pleuro-pneumonia in an aggravated form. As this same bullock had come from the western part of the country, it would seem that, should the report be true, the extensive sanitary measures which had been practiced in that region, must have been imperfect, and the watch set for the insidious progress of that disease had been too confidently overlooked after the stamping work of four years ago. Let us hope that this report from England is untrue, and that the proclamation of Secretary Rusk is accurate in its facts as to hte condition of our neat cattle.

ANOTHER VETERINARY COLLEGE.—While in Boston attending the last meeting of the United States Veterinary Medical Association, we heard some vague reports relating to the establishment of a new veterinary college in Washington City, D.C. These reports have been confirmed, and we have since received the announcement of the *National Veterinary College*, as it is entitled, and which counts in its faculty a large number of members of the Bureau of Animal Industry.

The school opened on the 18th of October, with requirements for graduation similar to those of other like institutions, but including an attendance of only two full courses of lectures for their graduates.

We have been requested to publish the following resolutions which are entirely pertinent to the subject, and speak in terms not less emphatic than the case demands and justifies:

Resolutions adopted at a regular meeting of the Philadelphia Veterinary Society, September 27th, 1892:

Whereas, It has come to our notice that the officers and staff of the Bureau of Animal Industry, connected with one of the departments of the National Government, propose establishing a veterinary school in Washington, and

Whereas, All prominent veterinarians agree that it is absolutely necessary for intelligent and well prepared young men to study at least three years to fit themselves to meet the multitudinous and intricate duties of the veterinary profession, and all reputable schools of this country now require three years' attendance, or propose inaugurating three-year courses of study during the coming session, and

Whereas, All of the veterinary schools of Europe require at least three years' attendance, and some of them four and five years, and the Royal College of Veterinary Surgeons of England has recently adopted a four-year plan of study, and the United States Veterinary Medical Association at its recent meeting in Boston, September 21st, 1892, declared in favor of a three-year course of study, and made this a necessary qualification for future membership in the Association; thus clearly showing the position of the best element of the veterinary profession, and

Whereas, We have a right to expect the Bureau of Animal Industry of the Department of Agriculture, as the only department of our Government under the direction of veterinarians, to use all of its influence to elevate the veterinary profession of the land, and not, by permitting its officers and staff to establish and maintain a new, two-year, short-term veterinary school, use its power to discourage thorough veterinary education in the United States, and neutralize the progress of the last ten years, and

Whereas, It seems to us contrary to the institutions of our Government to make use of one of the bureaus of the Government to establish and maintain a school, be it

Resolved, That this Society recognizes the utter impossibility of imparting sufficient veterinary instruction to students in two college sessions to enable them to practice veterinary medicine and surgery intelligently, and that it regards the establishment and maintenance of schools giving such courses of instruction as a menace to the progress of scientific veterinary medicine. Be it further

Resolved, That this Society urge upon the officers and staff of the Bureau of Animal Industry, who are about establishing a new veterinary college in Washington requiring but two sessions attendance upon instruction, to reconsider

their action, and to refrain from doing that which will tend to lower the standard of the veterinary profession, retard the progress of veterinary education, and lessen the dignity and standing of graduates of American veterinary colleges in this and foreign countries. Be it further

Resolved, That this Society protests against such use of the Bureau of Animal Industry, and that the Hon. Jeremiah P. Rusk, Secretary of Agriculture, be respectfully requested to prohibit this attempt to use the bureau as above described. Be it further

Resolved, That a copy of these resolutions be sent to the Secretary of Agriculture, the Chief of the Bureau of Animal Industry, and to each of the veterinary journals.

[Signed] A. E. CONROW, M.D., V.M.D.

MOORESTOWN, BURLINGTON CO., N. J.

AUGUST DIEUDONNE THEODORE LIESERING.—We are informed by one of our own exchanges of the death of this brilliant veterinarian in August last, at the ripe age of seventy-two. Besides being Professor of Theory and Practice, Anatomy, Physiology, etc., at the veterinary school of Dresden, Dr. Liesering was the author of numerous works relating to our profession, among which his treatise and atlas of anatomy stand at the head.

ORIGINAL ARTICLES.

VETERINARY SCIENCE IN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

By W. L. WILLIAMS, Lafayette, Ind.

(A Paper read before the United States Veterinary Medical Association).

In studying the origin, development, history, resources and future prospects of the veterinary profession in the United States, we should critically examine not alone the pioneer practitioners and the veterinary schools, but also every department of veterinary science which can in any appreciable manner affect its status as a whole.

The teaching of veterinary science in agricultural colleges dates from a very early period in our professional history, the pioneer institutions in this matter being, so far as I can learn, Cornell University, University of Illinois, and Am-

herst. Prof. Law was employed to come from England in 1868 to assume the chair of veterinary science at Cornell, which he continues to honorably fill, and at about the same time Dr. Detmers, now of Ohio University, became lecturer on Veterinary Science in the University of Illinois, followed a few years later by Dr. F. H. Prentice, and about 1869 it appears that Dr. Stickney became lecturer on veterinary science at Amherst.

It is well known that these agricultural colleges with lecture or professorships of veterinary science, were largely the result of the Act of Congress of 1862, donating public lands to such States and Territories as would provide colleges for the teaching of agriculture and the mechanic arts. These were given a still greater impetus in 1887 by the Act of Congress establishing agricultural experiment stations in connection with agricultural colleges, for original research into "the physiology of plants and animals, the diseases to which they are severally subject, with the remedies for the same," etc.

As a result of these inducements, we find that at present twenty-two agricultural schools have lectures regularly delivered on veterinary science to students of agriculture, while two colleges conduct regularly organized veterinary departments with a total of six veterinarians, making in all twenty-eight veterinarians regularly engaged in teaching veterinary science in colleges or universities, owing their origin and maintenance largely to the federal legislation above cited. Of these twenty-eight veterinarians, seventeen are employed as veterinarians to experiment stations, and to these are to be added seven station veterinarians who maintain no relation to the teaching force of the colleges, constituting a total of thirty-five persons employed in these institutions either in teaching veterinary science or investigating animal diseases. Compared with the total number of veterinarians, it is true their numbers are small, but when it is remembered that the parties in control of such institutions are presumed to seek out from among the masses those veterinarians showing the highest proficiency and greatest earnestness and progressiveness and, further, that in such institutions the incumbents in

the various positions are supposed to be provided with unusual facilities for study and research, and that such study is to be pursued and the results recorded as a part of their duty to the college, then this band of thirty-five veterinarians should be looked upon as at least a possible force in our professional development.

For the first few years of the period which our subject covers, the duties of these veterinarians were confined nominally to the teaching of veterinary science to students in agriculture, in such a manner and to such an extent as to be of practical value to them in rearing and handling live-stock. Later, veterinary departments, leading to veterinary degrees, were established in several colleges, and still more recently the position of veterinarian to experiment stations.

The scope of our paper, as announced, is already too great, and we shall be obliged to leave out of consideration the veterinary departments in agricultural colleges, and shall barely remark in passing that of four of these colleges which have been organized and solicited public patronage, Cornell University and the University of Minnesota have discontinued them, leaving the University of Ohio and the Iowa Agricultural College as the sole representatives of this class of instruction.

At the outset, when in 1868 and the immediately succeeding years, the pioneer teachers of veterinary science in agricultural schools were beginning their labors, the veterinary profession was practically unknown except in a few limited areas, including the great cities of the Atlantic seaboard, while the medical care of the far greater part of our vast number of domestic animals was intrusted to a horde of untutored farriers, and dissipated, unprincipled charlatans. Indeed, at that time the name veterinary surgeon was unknown to the great mass of people, while that of "horse doctor" was one of opprobrium and disgrace, and the two terms were so frequently transposed as to occasionally cause annoyance to pioneer veterinarians. In some of our Western States, the first qualified veterinarians to locate there were those employed by agricultural colleges, and in some cases, doubtless,

no other practicable means would have induced the veterinarian to so locate.

The colleges could illy afford to employ other than men of high moral, social and educational standing, and in turn their relation to the college admitted the veterinarian without further credentials to agreeable social and professional associations, essential no more to his comfort than to his greatest usefulness in influencing the forces then busily laying the primitive foundation of our profession in the United States.

By his position as professor or lecturer, the veterinarian's services were frequently in demand by the leading owners of live-stock, as well as by the local and general authorities in case of notable outbreaks of epizootic diseases, and enjoying through his position public confidence and esteem, became unconsciously a teacher of no small import in a manner not expressly demanded as a part of his direct duties. His services in this manner served, without in any degree inconveniencing him, to pave the way for the great number of veterinarians so soon to become his neighbors and colleagues. Yet his principal influence was to be exerted within college walls upon the agricultural students with whom he came in contact as instructor.

Primarily, this influence was apparently intended to be confined to teaching the intending agriculturist those principles of anatomy, physiology, hygiene, pathology and therapeutics as would be directly applicable upon the stock farm. This purpose had a more valuable and direct application in the early history of the movement than obtains now, when graduated veterinarians are located in almost every considerable live-stock center, a certain portion of whom are competent, qualified men.

True education is not readily hidden under a bushel, however, and when the student emerged from college with a true conception of veterinary science, although unacquainted with its details, he yet unconsciously became a force in his community, and bore to his neighbors some of the respect and admiration for veterinary science, which he had obtained

through his associations and study with his learned instructor. This indirect influence, through the medium of students, added to the direct influence of the veterinarian by his contact with intelligent stockmen, exerted a powerful influence in the formation of our profession.

It was impracticable to obtain figures as to the exact number of students who came under the direct influence of these earlier teachers, but it would probably be safe to estimate their number in 1870 at no less than one hundred different students each year, which has slowly increased, until the twenty-seven professors of veterinary science in these schools come in contact with not far from six hundred new students annually. These students, going out into their respective communities, imbued with a true conception of veterinary science, have exerted and continue to exert a good influence, second only to that of genuine veterinarians from our best veterinary schools.

They had much in their favor. The agricultural colleges being jointly Federal and State Institutions, were founded upon a high plane, and were independent to a great extent from the greed exhibited by private institutions conducted for revenue, and demanded for admission to their classes a high order of moral and educational attainments from their very origin, which are as yet undreamed of in many of our veterinary schools of the present day. The veterinarians, therefore, came in contact, not with ignorant, dissipated, ungentlemanly boors, but with high-minded gentlemen, destined to occupy an honorable rank and exert a profound influence. It was these instructors of veterinary science, more than any other one agency, which made the phenomenal moral and educational progress of our profession within the past few years possible. I have heard this form of education bitterly denounced by graduates of cheap veterinary colleges, who were sadly wanting in those qualities which go to constitute a gentleman; who lacked sufficient education to enter the preparatory classes in such institutions, and who had utterly failed in their brief college career to gain any conception of veterinary *science*, but only learned a few empirical formulæ, which might enable them to eke out a fraudulent existence. These

agricultural colleges have in many States proven the chief element in making veterinary science respectable, and have rendered it possible for fraudulent veterinarians to exist for a time in quasi-respectability. We do not hear such bitter denunciation from broadly educated, gentlemanly veterinarians.

There are, however, among the better educated of our profession, many persons who greatly undervalue the importance of these schools.

It is, moreover, unfortunately true that both in the past and at present there have been instructors in these schools who have failed in their mission and sent out students with superficial ideas relating exclusively to "rule of thumb" practice, differing from charlatanism none in its esential value, and having to a certain extent the same immoral and dishonest tendencies. Some, I believe, have held short courses of a few weeks' duration in veterinary science, and issued thereon certificates of a character which might prove of use in the hands of designing individuals in deceiving the public. But the failure of a few instructors to properly perform their duties—either through ignorance or design—does not constitute a proper basis for criticism of the entire body, or the central idea of their work.

Again, especially in these short courses, in which veterinary science forms a conspicuous part, there may occasionally enter designing individuals, who come for the sole purpose of returning to their communities with some cheap notoriety and use their attendance at the short course for advertising purposes. The cheapness, shortness of course, and absence of mental or moral faculties demanded at some of our veterinary schools, serves, however, to practically eliminate the danger in this direction from our agricultural schools.

On the other hand, many intelligent young men, reared on the farm and quite familiar in a general way with domestic animals, entered these schools largely for the purpose of acquiring an amonnt of veterinary science which would prove useful to them as stock-breeders, especially in localities where veterinarians were then unavailable, became unexpectedly—at times almost unconsciously—swerved from their or-

iginal purpose, and became special students of veterinary science, and along with such collateral studies as zoology, botany, chemistry, etc., took up, to a greater or less extent, the entire category of veterinary topics, and in their four years' course put as much time—frequently far more thought—upon these special branches than is allotted to students in our short course colleges. Rarely did they stop with this, but having acquired a taste for veterinary study, and an inspiration for earnest work, armed with the knowledge of the collateral studies, until recently superior to that offered in any veterinary college in the land, and supported by a liberal general education, these students sought out veterinary colleges, and after obtaining liberal credits for the work done, entered the advanced classes and passed final examinations with credit. By referring to veterinary colleges requiring two or three terms attendance for graduation, we find students from the agricultural schools admitted to examination after one session's attendance, and we have been unable to find the record of one whose knowledge was found wanting; but in every, or nearly every case, they have carried off honors and in an unusually large per cent. of cases have won first places. They were not book-worms either, but sustain to-day in the battle of life the positions assumed upon graduation. Numbering far less than ten per cent. of the total number of graduates from American colleges, a very large proportion of these students from agricultural colleges, or from veterinary departments of agricultural colleges, occupy prominent positions.

Of the thirty-seven veterinarians engaged in experiment stations, or teaching in agricultural colleges, twenty-four received their veterinary education in America, and of these no less than sixteen or seventeen per cent. are either graduates of these colleges, or had been well advanced in the courses prescribed therein.

If we turn to the pages of current veterinary literature, or to our National Bureau of Animal Industry, or to the Faculties of our veterinary colleges, we find the names of these once agricultural students occupying prominent places,

and here, in our National Association, we find these men prominent in your councils and discussions. Certainly these men must wield a far-reaching and salutary influence, not alone as moulders of public opinion, but to them certainly is due the decision of many young men of education and character to take up as a life-work the study of veterinary science.

So far we have dealt with the work and influence of these colleges in the past, when the veterinarians occupied the single position of lecturer or professor of veterinary science. At present the number of veterinarians has increased very considerably, and a new element has appeared which is closely bound up with the work heretofore done; the agricultural experiment station has been added, and the professor of veterinary science has in nearly every case been asked to accept, in addition to his former work, the post of veterinarian to the experiment station, and his salary has been apportioned between the two. A few of them maintain the professorship alone, while in other cases there is no connection with the teaching department, but only with the station.

The scope of study has not materially changed in recent years, and still embraces, as a rule, a consideration of all the major subjects of veterinary science, varying greatly in different colleges in thoroughness and amount of time devoted to it.

In some, veterinary science is taught in but one year of the course, or even less, occupying five hours' class-room work per week, while in other schools each class in the four year's course comes in contact each year with the instructor in veterinary science, so that during their course they devote about 500 hours of class-room and laboratory work to distinct veterinary topics—an amount equivalent to that required in our shorter course veterinary colleges. Such is the time required by some colleges, such as Purdue University, with iron-clad course of study, and all students taking the agricultural course must take so much veterinary science and no more. In other institutions, like Cornell University and the University of Illinois, which are largely elective, the student may take a much shorter course in veterinary science,

or may, at his option in many cases, prolong it far beyond the point named, exceeding in the time allotted to it the time required for graduation in most of our veterinary colleges.

Thus, the writer devoted to the study of veterinary science, not including collateral studies, one-third time for three years of nine months, or the equivalent of full time of one year of nine months; equalling the time devoted in some of our veterinary colleges, *including* collateral branches.

The equipment in these colleges varies greatly. In some it is practically wanting, while in others it surpasses in some respects that of many of the veterinary colleges. As a student I found a better equipment in library, instruments, and apparatus at the agricultural than at the veterinary schools, and to-day several agricultural schools place at the disposal of their students better libraries than do the veterinary colleges; while their collection of instruments and apparatus quite suffices for purposes of instruction.

In point of buildings the equipment shows extreme variation. The class-rooms are usually located in some of the main buildings, and generally some detached buildings more or less commodious and convenient are provided for special phases of work. Practically all the colleges having maintained a chair of veterinary science for any length of time are provided with ample dissecting-rooms, where the anatomy of the domestic animals may be studied under very favorable conditions.

In most colleges ample accommodations are afforded for the conducting of free clinics, while in others they are limited; and still more frequently illy arranged and not adapted to their needs.

As an illustration I might cite Purdue University, which in one building, 28x35 feet, expects dissections, experiments with contagious diseases, and free clinics to be simultaneously and successfully conducted; three classes of work under one roof, and practically in the same room which are universally recognized as incompatible.

The operating-room in this case adjoins directly the dissecting-room, with a door opening between the two, render-

ing it impossible to carry out the modern rules of surgery, and any surgical operation highly dangerous. The private surgeon, operating under such conditions, would be held responsible for untoward results in his patients.

The additional possible danger of contagious diseases in contiguous stalls renders the conditions for free clinics quite unfavorable. This probably forms a solitary exception in such mal-arrangement of buildings, and there is reason to hope it will be eventually remedied.

I know of no other school where so unfavorable conditions exist.

The material for clinical demonstration in most of these schools is reasonably adequate, and of an appropriate character, since the schools are generally located in agricultural communities, and the clinics usually free, the agricultural student receives clinical instruction upon those diseases most prevalent among farm animals, and consequently of most direct interest and value to him.

Again, the student who desires later to complete an education in veterinary science finds these clinics of special value, pre-eminently so if he intends after graduation to locate in an agricultural region. In this respect these clinics are usually quite superior in character to those offered in our veterinary colleges located in large cities, where they are confined closely to the diseases incident to city environments and work, while the diseases of young and breeding animals are rarely met with. Here the intending veterinary student can study with great advantage the collateral branches and acquire a general education, which is, as a rule, sadly deficient in our profession in America—and can at the same time enter upon the more direct veterinary studies deliberately and yet earnestly, and in addition enjoy special facilities for studying that class of diseases which are the most ineffectually taught in veterinary colleges—the diseases of young and breeding animals.

It certainly should cause no surprise to find such students distinguishing themselves in the veterinary colleges after such deliberate preparation, instead of plunging suddenly into the whirl of the busy curriculum of the short-course col-

leges, with neither general nor special preparation. In additional proof of the value of this teaching, it may be related that our leading veterinary schools are careful to obtain catalogues of these agricultural colleges, and supply to each agricultural student their catalogues, knowing full well that from their ranks they secure their best and most reliable material. Yet there is no reason for doubting if we have made any substantial progress in these respects in later years.

Where the instructor in veterinary science maintains the same position held ten to twenty years ago, and is simply professor of veterinary science, there is certainly every reason to expect even greater good, and in a fair proportion of cases we believe these expectations are realized; but in the majority of these institutions the veterinary surgeon is made jointly professor in the college and veterinarian to the agricultural experiment station, drawing about one-half his salary from each, and being expected to divide his time accordingly. In addition to filling these two positions, some occupy also that of State veterinarian, and all, or nearly all, are permitted to use the residue of their time in private practice. If prior to the origin of the experiment station the veterinarian's time was profitably consumed in his duties then it must be admitted that having him do the same work in one-half the time must act injuriously on the results. It may properly be urged that in most cases the experimental work is slighted, and the usual time given to college work proper, in which case it would be difficult to defend the practice of paying half the salary from the experiment station fund. As already indicated, veterinarians in experiment stations may be divided into two classes—those who are at the same time teachers in the agricultural classes, and those whose whole time and duty are confined to experimental work. The salaries and expenses for material for both classes are paid from the experiment station appropriation provided for by Congress in the Act of 1887. The sixteen veterinarians, who are jointly teachers and experimenters, cost the Federal treasury not far from $20,000 per annum on account of station fund, while the eight persons engaged exclusively in this work cost in

salaries and material not far from $30,000, or a total cost per annum for experiments on animals of $50,000. A comparison of these figures with the existing equipments, and the work accomplished as shown by recorded results, is, to say the least, somewhat startling. There is more than one station where the veterinarian receives one-half his salary for supposed station work, yet has no building or even a paddock, coop or cage in which to confine an experiment animal, has no animal to confine, no microscope or microscopical appliance, no bacteriological apparatus, no money to expend for material, appliances or other necessities, and no immediate prospects of such funds or conveniences being placed at his command. Yet such men inform me that they are occasionally chided for their meager results. Still, they can scarcely be called the most unfortunately situated, and instead of saying, "Blessed are the poor," we should say, "Blessed are the destitute, for from them no rational man can expect returns." Surely, some of us are in a far more unpleasant situation, with buildings totally inadequate and wholly unsuitable, enough apparatus to occupy some space, yet not enough to work with, and an amount of funds available barely sufficient to warrant failure of every undertaking.

At the scene of my labors, the veterinarian has at his command one microscope without eye-pieces, and while there is a considerable number of appliances for bacteriological work, yet the equipment is quite inadequate. For material the necessary funds cannot be obtained. When eight or ten cattle were asked for and promised, as a basis for experimentation with *actinomycosis bovis* in relation to its transmissibility from animal to animal, and the fitness of the meat of actinomycotic cattle for human food, the authorities delivered one superannuated he-goat whose peculiar idiosyncrasies and odor had rendered him unpopular at the college farm. While the demands have not in all cases been so wholly denied, yet the funds placed at the disposal of the veterinarian have been so meager as to ensure failure of experimental work, and bring all the more censure on the veterinarian for the want of substantial results for the meager expenditure. The equipment

in other stations, where one man is expected to act both as professor of veterinary science and veterinarian to the experiment station, is, in some cases, not a little better than what we have related, though certainly wholly inadequate, with but two or three exceptions, to warrant the expectation of creditable results.

Another formidable obstacle to successful experimentation is the heavy demands of class work upon the time and thought of the veterinarian. Five hundred hours annually, or an average of three hours per day during the year, devoted to class work, with the necessary time for due preparation, for class duties is in itself sufficient work for the average man. To this must be added time for private practice, which is essential to the capable teacher, in order that he may teach from the practical standpoint of experience. Surely, little should be expected of him in addition.

In general, also, experiment stations are under the direct management of the station director and college president, who only in a moderate number of cases have any practical knowledge of live-stock, and very rarely anything approaching a just conception of veterinary science, but generally have educations leading to such degrees as M.A., LL.D., D.D., Ag. Ch., B.S, etc., rendering successful work under them impossible, except the veterinarian enjoy their confidence to such a degree (which is rarely the case) as to receive their sanction to do his work in his own way.

Yet another serious obstacle confronts the labor of this double-headed scientist. The ideal professor of veterinary science in an agricultural college must be a veterinarian, who, along with a suitable, general and special education, has had a long and extensive experience in a rural practice, and has acquired an experimental knowledge of the diseases and their causes, of farm animals, especially of young and breeding stock.

On the other hand, the veterinarian to the experiment station is expected to possess, and as a rule should have, a thorough practical knowledge of bacteriology and bacteriological methods, which requires a long and close application to laboratory study.

If we have a man in this country who possesses both these requirements to a high degree he has so far concealed his identity. Such a combination is in fact practically impossible. The literature supplied specially for the veterinarian is as a rule very meager. In my own case, although the post of veterinarian has existed for four or five years, he is not supplied with any current literature relating to his work, and only during the past few weeks the first two standard books relating to his work were procured. Under such unfavorable environments we are not warranted in expecting great results.

With the few stations commanding the entire time and energy of their veterinarian, we find naturally better equipments for the work; Nebraska leading, followed by Missouri and others of less note.

We have given a rough estimate of the number of workers in experiment stations, their equipment and environment, and their cost to the country. Their value must be estimated by the work accomplished and recorded. During the past year we have received station bulletins, to which the veterinarians have contributed three popular articles on glanders, and one on diseases of sheep, none of which made any pretence to being scientific, nor to have been founded on any original work or study of the authors, but merely short popular descriptions for farmers; also one treatise on flukes, one on Texas fever, one on Texas fever and hog cholera, one on ringworm in cattle and one on enzootic cerebritis in horses, all of which were brief and contained nothing in advance of the general level of veterinary science, and nothing likely to be preserved in future years as treasures of science, although it must be admitted in passing that some of them possessed temporary value to farmers and stockmen, and even in some cases to veterinarians.

One more recent contribution to our literature from station veterinarians must be passed in review, being an article entitled "A Double Monstrosity of a Calf, Traceable to an Injury of its Mother," occurring in a bulletin of the Minnesota station, in which the veterinarian describes a calf born at full term and

normally developed, except a slight spinal curvature and absence of an anus and part of the intestine, and relates that the mother when five months pregnant was slightly horned by another cow high in the right flank, sufficient to cause a bruise as large as a fifty cent piece, and says: "No other conclusion could be reached than to ascribe the cause of the abnormalities of the calf to the blow which its mother received four months previous to the birth," and concluded that this case furnished a powerful argument in favor of dehorning. How a slight wound insufficient to abrade the mother's skin, and located in a part quite distant from the fœtus in utero, could curve the spinal column of the fœtus, annihilate a considerable portion, and displace the remainder of its intestine without injuring the dam or the fœtal membranes, or in any way interfering with the health and growth of the fœtus itself, the author does not attempt to explain. In fact he cannot explain except by revolutionizing our present knowledge of embryology, and the contribution without reasonable explanation is certainly unwarranted. Yet station directors demand and expect contributions of the character of these for the purpose of making a show in their bulletin, and thus attempt to have the public believe that the station veterinarian is actively engaged in important scientific work. I know that some of these bulletins were written under protest from their authors, but their protests were ignored.

The past year's record is a fair sample of preceding years, with a few notable exceptions, and gives a reasonable estimate of the returns for the annual expenditure of $50,000 in this work.

In earlier years Billings and Detmers have contributed considerable of interest to experiment station literature, confined chiefly to hog cholera, although they have added some minor contributions of distinct merit. All are to some extent acquainted with the hog cholera contributions of Billings, which are so heavily adulterated with personal egotism for himself, and personal hatred towards others, as to render it difficult to sift out valuable truth, and it will probably be several years before a safe estimate can be placed on the value of

his work. More recently his contributions are almost wholly personal in character, and should the present rate of convergence toward personality continue, hog cholera will be entirely crowded out, and his entire energy, capital and force will be expended upon Billings and Salmon.

If the estimate which I have placed upon the results of experimental work in relation to animals and animal diseases, as carried on in experiment stations, is at all within the bounds of reason, it must be admitted that there is a gross waste of public funds and that there is need for some abuses to be corrected.

The possible importance of these experiment stations to our profession is great, and we should look to it that these possibilities are in a reasonable measure realized. The proper equipment of a few stations for veterinary experimentation, with competent veterinarians in charge, should, and doubtless would, do much for the welfare of the nation and the honor of our profession. At present we lack two elements, equipment and men; but given the former, and let it be understood that there is a suitable field for the latter, they will not be long in being found.

While a given experiment of animals is far more expensive usually than other agricultural experimentation, they yet possess the great value of universal application; whereas an experiment on cereals, etc., applies only to the same climate, soil season and other environments, but the nature of one animal disease is the same in winter or summer, in wet or dry seasons, in north or south, on clay soil or loam.

States having great live stock interests could well afford to discontinue a large part of their experimentation with wheat, peanuts, and morning glories, and devote a large part of the experimental fund to animal physiology and pathology, in conformity with the letter and spirit of the law; but the less of the fund expended on men under the present environments of joint positions of professor and experimenter, the better both for the community and our profession. "Do one thing well," can be emphasized no more in any field of work than the one under consideration. We believe it was an evil

day when these two lines were attempted to be combined in one man.

In those colleges and stations where an equipment, although inadequate, is furnished, there is usually sufficient annoyance to the veterinarian to detract his attention from his class-room work (which would otherwise be far better accomplished), and results in his doing half time and thought at two lines of work and leaving each line half done. We have noted the insignificance of the investigations recorded by experimenters, and were we to turn to their recorded study and work as teachers when occupying the double position we should find it quite as meager. It is a noteworthy fact that these colleges go to our veterinary colleges and select in the main the brightest and most promising young members of our profession, and under proper environments these men should distinguish themselves by their recorded observations and studies, for certainly their opportunities in these places should be the very best; yet it seems that a man no sooner enters such a position than he is largely lost to sight in so far as recorded work is concerned. Few indeed among them are ever heard from in standard literature in our journals or in our associations.

It is to be hoped that these matters will soon largely mend themselves. First of all, the lack of results from station work must eventually force those in control to seek the cause and attempt its removal, and when that is done we believe we shall find the positions of teacher and experimenter thoroughly separated. A mutual friendship and interest between the two should always exist, as they must prove very helpful to each other in many ways.

The teacher should be left free to devote his energies to teaching and allowed time for study and thought, and opportunity for an amount of private practice as would keep him refreshed and experienced. Experimental pathology belongs more properly to veterinary sanitary science, and should be pursued rather in relation with the veterinary police system of a State than with college education, and should to a great extent be under the control of intelligent stockmen.

College authorities should create some standard to be applied in securing or retaining veterinarians in their positions, and should demand, in addition to the requirements of common manhood and education, special adaptablity for the position of teacher or experimenter as evidenced by successful work already accomplished in the line of proposed future duties, and not rely wholly upon the recommendations of interested preceptors or promiscuous laudations of incompetent persons.

Then when a man is selected for one of these positions let his superiors give him ample equipment and reasonable freedom in the detail of his work, and then demand results and accept no apologies. We are constrained to believe that in the not far distant future these two lines of veterinary work will develop rapidly, resulting in great good to the commonwealth and honors to our profession and to science in general.

THE USE OF MALLEIN

FOR THE DIAGNOSIS OF GLANDERS IN HORSES, AND EXPERIMENTS WITH AN ALBUMOSE EXTRACTED FROM CULTURES OF THE BACILLUS MALLEUS.

By E. A. de Schweinitz, Ph.D., Chemist, and F. L. Kilborne, B.V.S., Director Veterinary Experiment Station.

Bureau of Animal Industry,
Department of Agriculture,
Washington, D.C.

In December, 1890, we extracted from culture liquids of bacillus malleus an albumose which appeared to be the active principles in these cultures. At that time a preliminary experiment was conducted to see if this substance could be used in making guinea pigs immune to the disease of glanders. The result was that out of a set of five, three vaccinated and two checks, only one, a vaccinated animal, recovered from an inoculation of a glanders culture. This experiment has since been repeated on sets of ten and twelve guinea pigs with, at the present writing, only negative results. A note of this work was published in the annual report of the Department

of Agriculture for 1891. The albumose was best obtained from the cultures, after the removal of the germs by means of a Pasteur filter, by precipitation with absolute alcohol, resolution in water and reprecipitation.

In the July number, 1892, of the Archives de Medecine Experimentale et d'Anatomie Pathologique, A. Babes describes the isolation in the same way of apparently the same substance from glanders cultures. He claims with this to have been able to immunize guinea pigs against glanders. He has either failed to see or note our earlier experiments.

During the present year we have, at the direction of Dr. D. E. Salmon, turned our attention to the use of mallein as a means of diagnosing glanders.

In the experiments made by Preusse, Nocard,* Tietze,† Eber‡ and others, the mallein used was prepared, by scraping the surface growth from potato cultures, dissolving in water, sterilizing by heating to 100° C., filtering, and injecting upon the addition of an equal volume of a two per cent. solution of carbolic acid.

Our mallein was prepared in the following way: Acid peptonized beef broth cultures containing five per cent. of glycerine were inoculated with the glanders bacillus, and the cultures allowed to grow for two months at the temperature of the room. At this time the growth, which had been very abundant, had almost entirely ceased. The liquid was then heated for two hours from 80° to 100° C., after which it was filtered through a Pasteur tube to remove the germs. The resulting clear amber liquid, after being tested to prove the absence of germs and diluted with 50 per cent. of glycerine for better preservation, were used for injections. A purer lymph was obtained by the precipitation of the filtered cultures with absolute alcohol, and resolution in 50 per cent. glycerine. For practical purposes the crude lymph is equally as good. The greatest care and precautions have to be observed

*Nocard, Recueil de Med. Veter. 1892, No. 8, p. 209.

†Eber, Recueil de Med. Veter. 1892, No. 8, p. 86.

‡Tietze, Berl. Thierarz. Woch. 1892, No. 8, p. 86.

in all of the work that the cultures are pure, of the proper age, and that the lymph is perfectly sterile and can be so preserved. Care must also be observed in making the injection to avoid the danger of contamination or infection by means of the syringe.

The value of the mallein prepared as described, as a diagnostic agent for glanders in horses, has been extensively tried at the experiment station of the Bureau of Animal Industry; and also by Doctors Francis of Texas. Dinwiddie of Arkansas, and Casewell of Chicago. Lymph was also sent to several other experiment stations and veterinarains, but they have, as yet, failed to report. The results of these tests are recorded in the accompanying tables.

As sent out for use the lymph is diluted with an equal volume of glycerine, so that it will keep better.

The amounts of mallein named in the charts refer to the undiluted solution. Of the diluted solution just double the quantity was given.

At first we made injections with 1cc. of the mallein (2cc. of the 50 per cent. solution), but finding this to be apparently too large a dose, as it sometimes gave a decided febrile reaction in healthy horses, we have decreased the quantity to 0.5cc. of the mallein, or 1cc. of the 50 per cent. solution. But, judging from the results being obtained from some experiments now in progress, we may find it desirable to return to the larger dose, and depend on a second injection of those horses which gave a doubtful reaction for a positive diagnosis.

In several instances the same horses have been repeatedly injected. To indicate this in the charts a figure in brackets is placed at the head of the column showing the temperatures, which figure indicates the number of times the horse has been injected.

With the exception of a few of the earlier injections which were made over the shoulder, we have made the injection near the middle of one side of the neck, where any local swelling can be readily detected. In our experiments the local reaction, or swelling, in the glandered horse has been

more constant and fully as characteristic as the febrile reaction.

The following notes refer to the tests made with mallein, as recorded in Table 1. The numbers correspond to the numbers of the horses. The notes were recorded by the veterinarians making the tests:

Horse No. 1.—Horse was seven or eight years old, the right submaxillary gland was enlarged, there was a discharge from the right nostril, but no farcy buds. The condition of the animal was good.

The day after the injection there was an increased flow from the right nostril and painful enlargement at the point of injection.

No. 2.—Horse was six to seven years old. Both submaxillary glands were enlarged, and there was a slight nasal discharge. The condition of the animal was good. It had been affected for six to seven months.

No. 3.—This animal was four years old, both submaxillary glands were enlarged, but there was no nasal discharge. Right hind leg swollen. There were thirteen farcy buds. The general condition was poor.

No. 4.—The condition of the animal was fair, and there were farcy buds on front legs and on the breast. The respiration was labored. There was no nasal discharge, the submaxillary glands were not enlarged, but the left eye was mattering. Dr. Francis diagnosed a probable mild pneumonia in addition to the farcy.

No. 5.—Horse was about nine years old. Both submaxillary glands were enlarged, there was some nasal discharge. Condition of the animal was very bad, farcy buds and chancres on both hind legs, veins of forelegs enlarged. The animal urinated frequently.

No. 6.—This animal was perfectly healthy.

No. 7.—This animal was six years old, in good flesh. She had been exposed to glanders about five weeks before injection. She was suckling a foal. The foal was kept from her for twelve hours previous to taking the temperature before injection. After the injection, and during the test, the foal was returned to her.

No. 8.—This animal was a two-year-old filly, diseased with glanders, in good flesh and apparently feeling well. The owner insisted upon having her shot immediately after the temperature was taken the last time.

No. 9.—This animal was an aged mare which had been exposed to glanders five weeks before the injection. She was in very good flesh and condition.

No. 10. This was a three-year-old entire horse, small size, well nourished, healthy. A painful swelling formed at point of injection in four hours, and persisted forty-eight hours. Maximum temperature was reached ten hours after injection and was 17° F. above that at the same time the previous day.

No. 11. This was a four-year-old gelding, in fair condition, healthy, weight 1,050 pounds. The local swelling persisted for two days, and temperature rose to 0.7° above that at the same time the previous day.

No. 12. This animal was an old mare with chronic glanders, both lung and nasal lesions. Irregular temperature, usually above normal. Large local swelling for two days. Maximum temperature was reached twelve hours after the injection, and was 2.2° above that of the corresponding time the day before.

No. 12. Reinjected. Maximum temperature was reached ten hours after making the injection, and was 2.5° above that at the corresponding time the day before. The local swelling persisted for three days.

As for the notes on the horses which were injected by this Bureau, all of which were kept very carefully, it is not necessary to go into detail here. In general, we may say that the glandered horses, except No. 14, were pronounced cases of the disease, having been condemned for glanders and farcy, in the District of Columbia, and sent to the veterinary station to be destroyed. Nos. 7, 23, 25, 31, 34, 35 and 39 were cases of glanders, with well marked nasal lesions. Nos. 10, 19, 20, 21 and 26 showed only symptoms of farcy (although No. 19 developed nasal lesions after the injections). The only symptoms shown by No. 14 before injection were an elevated temperature, 101° F. to 102.5° F., and an enlarged,

rounded (not nodular) left submaxillary gland, with a history of coming from a stable from which two horses were removed and condemned for glanders September 21, 1891. From this date until Feb. 13, 1892, the mare continued in excellent condition, and the best of spirits, with no perceptible change in the above symptoms, although freely purged with aloes two or three times during the period. Two days after the first injection there appeared a slight nasal discharge, followed by an attack of acute glanders, the animal dying March 26th.

Guinea pigs were inoculated from farcy buds, or with the nasal discharge from horses Nos. 7, 20, 23, 25 and 26, the pigs so inoculated all contracting glanders.

The healthy horses used, Nos. 8, 9, 11, 12, 13, 15, 16, 17, 18, 22, 24, 27, 29, 30, 33, 36, 37 and 38, were in general in good condition at the time of the experiment.

The glandered horses, except those with a high temperature at the time of the injection (Nos. 34, 35 and 39,) all showed a marked rise in temperature in from four to eight hours after the first injection, and usually reached the maximum in from ten to sixteen hours after the injection. Further, there was in all cases a characteristic, very tender, abrupt swelling at the point of the first injection, and also at all subsequent injections, except in Nos. 19, 20 (ninth injection) and 34, generally beginning to appear two to four hours after the injection, continuing on the next day and increasing in size for from one to three days, disappearing again three to nine days after the injection.

Some of the healthy horses showed a slight rise of temperature (No. 8 a marked elevation) upon the first injection, but only in one instance, horse No. 38, did this rise persist on the second injection. This latter horse has unfortunately been lost sight of, and sold. It was, to all appearances, free from disease when hired for the injection, but the rise of temperature upon two successive injections would look suspicious, although it did not show the characteristic swelling of glanders after either injection. In healthy horses, in no instance was there very marked swelling at the seat of the injection of doses not exceeding 1 c.c. of the mallein. When it

did appear, it developed in two to six hours, and had disappeared again by the next day.

Horse No. 7 received a daily injection of 1 c.c. of the mallein from May 11 to June 23, inclusive. During this time there was no elevation of temperature, which varied from 99.5° F. to 101.6° F. But after each injection a local swelling appeared, varying in extent from six to ten inches across, and disappearing at the end of about the third day. During the last week of the injections the swellings were less marked, but still invariably followed each injection, otherwise no effect was noted from the continued treatment.

On horse No. 21, the farcy buds had entirely healed within a week after the first injection, and on No. 20 the extensive farcy swellings had all healed, July 15th. Except a slight discharge from the left ear of No. 20, these two animals have continued apparently entirely well, and have improved in general health since the above dates. However, the last injections of the mallein, August 27th and 30th, caused a decided rise in temperature and a marked characteristic swelling at the point of injection, which would indicate that the horses are not free from disease.

Table V shows the effect upon horses of the albumose extracted from the cultures. In the first of the experiments, the amount used, 0.005 grammes, was evidently entirely too large, causing almost as much reaction in the healthy as in the glandered horses. In the second and third experiments the dose was reduced to 0.002 grammes per horse, but this was also slightly too large. This table serves to show the powerful effect of the poison secreted by the glanders bacillus. A dose of only 0.001 grammes of the albumose would probably be sufficient to give a decided reaction.

In conclusion, the tests made show that mallein is of great value in the diagnosis of glanders in horses. The injection of 0.5 or 1 c.c. of the mallein may cause a slight rise of temperature in a healthy horse, but it will rarely give a reaction upon a second injection; and there will not occur on the healthy horse any marked swelling at the seat of the injection. On the glandered horse, the first injection always gives a marked febrile reaction (except as noted) and a large swell-

ing at the seat of injection. Subsequent injections also give a similar reaction, although frequently less marked. Healthy horses readily acquire an immunity to large doses of the mallein, not so acquired by glandered horses. The active principle in mallein is an albumose which can be precipitated from the cultures by means of alcohol or ammonium sulphate.

Further experiments may prove that a preventive injection or treatment of glanders in horses is possible. The directions, which were sent out to serve as a guide in testing the value of the mallein, may be conveniently given here for future reference.

Make the test, if possible, with a healthy horse, as well as with one or two more affected with glanders. Take the temperature of all these animals three times a day for one or two days before making the injection. On the day of making the injection, take the temperature every two hours from early in the morning until late in the evening. Use for each horse one cubic centimeter of the solution as sent you, and make the injection beneath the skin of the shoulder. Be careful and thoroughly sterilize the syringe after injecting each horse, or better, use separate syringes for healthy and suspected animals. If the same syringe must be used, inject the healthy animals first, and thoroughly sterilize the syringe after each of the other injections. Sterilize the thermometer in carbolic acid after taking the temperature of each horse. The temperature will begin to rise, as a rule, from three to four hours after the injection, and reach its maximum eight to ten hours after injection. On the two days succeeding the injection, take the temperature three times a day. Note the general condition of the animal both before and after the injection. After four or five days, the injection should be repeated. Keep the solution in a sealed bottle, and in a cool place. As sent from here it is free from germs.

So far as we have experimented, the mallein has caused a rise in the temperature of all horses affected with glanders; but it is possible that it also, in rare instances, causes a rise in the temperature of horses that are not affected with this disease. We deem it important that this latter point should be definitely determined by a large number of observations.

TABLE No. I.

EXPERIMENTS WITH 1 c.c. MALLEIN.

Tests by M. Francis, College Station, Tex. Tests by John Caswell, Chicago, Ill. Tests by R. R. Dinwiddie, Fayetteville, Ark

Temperature.	Temperature.	Temperature.

TABLE No. I.

EXPERIMENTS WITH 1 c.c. MALLEIN.

Tests by M. Francis, College Station, Tex. Tests by John Caswell, Chicago, Ill. Tests by R. R. Dinwiddie, Fayetteville, Ark.

Before Injection.

Temperature.					
	No.1	No.2	No.3	No.4	No.5
July					
19, 9.00 a.m.	100.	99.9	100.6	102.	101.6
19, 2.00 p.m.	100.	100.6	101.6	102.2	101.8
19, 5.30 "	100.6	100.7	101.6	102.2	101.8
20, 9.00 a.m.	100.	99.9	100.9	104.4	101.4
20, 2.00 p.m.	100.4	100.6	101.9	102.9	101.8

Temperature. Healthy, No. 6.		Temperature. Healthy, No. 7.		Temperature. No. 8.		Temperature. Healthy, No. 9.	
July		July					
24, 9.00 a.m.	99.8	12, 8.00 a.m.	100.4	8.00 a.m.	102.4	8.00 a.m.	100.
24, 4.00 p.m.	100.2	12, 11.00 "	100.4	12.00 m.	100.4	11.00 "	100.2
24, 6.00 "	100.2	12, 5.30 p.m.	100.6	6.00 p.m.	101.2	5.30 p.m.	100.4

Temperature. Healthy, No. 10.		Temperature. Healthy, No. 11.		Temperature. No. 12.		Temperature. Reinjec. (2) No. 12.	
April		April		April		April	
4, 9.00 a.m.	99.6	8, 9.30 a.m.	99.2	12, 6.30 a.m.	99.9	18, 9.00 a.m.	101.
4, 3.00 p.m.	100.8	8, 2.00 p.m.	100.	12, 8.30 "	99.7	18, 3.00 p.m.	101.
4, 7.00 "	100.1	8, 6.30 "	100.2	12, 10.30 "	100.	18, 7.00 "	101.3
5, 6.20 a.m.	99.8	9, 6.00 a.m.	100.	12, 12.30 p.m.	100.9		
5, 8.20 "	99.	9, 10.00 "	99.9	12, 3.30 "	100.9		
5, 10.20 "	99.	9, 2.30 p.m.	99.2	12, 4.30 "	101.		
5, 12.20 p.m.	99.5	9, 8.00 "	100.6	12, 6.30 "	101.7		
5, 2.20 "	100.	9, 10.00 "	100.4	12, 8.30 "	101.		
5, 4.20 "	100.3			12, 10.30 "	101.		
5, 6.20 "	100.5						
5, 8.20 "	100.3						

When Injected.

Injected at 7 a.m.					
July					
21, 9.00 a.m.	100.	100.	100.	102.5	101.4
21, 11.00 "	102.4	102.	101.8	102.9	102.3
21, 2.00 p.m.	103.5	102.	103.5	103.5	102.7
21, 5.00 "	104.2	103.4	103.9	103.5	102.8
21, 6.30 "	103.5	104.	104.2	103.1	103.4

July		July								Injected at 6.20 a.m.		
25, 8.30 a.m.	99.8	13, 8.30 a.m.	100.	8.30 a.m.	100.8	8.30 a.m.	100.			April		
25 10.30 "	100.2	13, 10.30 "	100.2	10.30 "	101.	10.30 "	100.2			6, 6.20 a.m.	99.2	
25, 12.30 p.m.	100.1	13, 12.30 p.m.	100.8	12.30 p.m.	102.4	12.30 p.m.	101.4			6, 8.20 "	99.2	
25, 2.30 "	101.	13, 3.00 "	101.8	3.20 "	104.8	3.00 "	100.6			6, 10.20 "	99.4	
25, 4.30 "	101.4	13, 6.00 "	100.4	5.00 "	104.8	6.00 "	100.4			6, 12.20 p.m.	100.	
25, 6.30 "	101.8			6.00 "	104.8					6, 2.20 "	101.3	
25, 8.30 "	101.									6, 4.20 "	102.	
										6, 6.20 "	101.8	
										6, 8.20 "	101.4	
										6, 10.20 "	101.	

Injected at 6.45 a.m.		Injected at 6.30 a.m.		Injected at 7 a.m.	
April		April		April	
10, 6.45 a.m.	99.3	13, 6.30 a.m.	100.3	19, 7.00 a.m.	100.4
10, 8.45 "	99.6	13, 8.30 "	100.5	19, 9.00 "	100.8
10, 10.45 "	100.	13, 10.30 "	101.3	19, 11.00 "	101.7
10, 12.45 p.m.	99.	13, 12.30 p.m.	101.9	19, 1.00 p.m.	101.9
10, 2.45 "	100.2	13, 2.30 "	102.9	19, 3.00 "	102.7
10, 4.45 "	100.2	13, 4.30 "	103.8	19, 5.00 "	103.8
10, 6.45 "	101.	13, 6.30 "	103,9	19, 7.00 "	103.5
10, 8.45 "	101.3	13, 8.45 "	103.		
10, 11.00 "	101.2				

After Injection.

Swelling at Point of Nose.		Swelling.		No Swelling.								
July						July		July				
22, 10.00 a.m.	103.	101.9	101.5	103.8	102.3	26, 6.30 a.m.	99.8	14, 8.30 a.m.	100.2	8.30 a.m.	105.4	8.30 a.m.	99.8
22, 2.00 p.m.	103.2	102.	102.4	102.	103.8	26, 8.30 "	100.	14, 3.00 p.m.	100.	3.00 p.m.	103.4	3.00 p.m.	99.8
22, 5.30 "	102.2	101.5	102.	101.5	102.2	26, 10.30 "	100.8	14, 5.30 "	100.	5.30 "	102.	5.30 "	99.8
						26, 12.30 p.m.	100.2						
						26, 2.30 "	100.						
						26, 4.30 "	100.						
						26, 6.30 "	100.						

April													
7, 6.20 a.m.	99.8												
7, 12.20 p.m.	99.4												
7, 4.30 "	99.												
8, 9.00 a.m.	99.												
8, 1.50 p.m.	99.1												
8, 6.15 "	100.												

April													
11, 6.00 a.m.	99.9												
11, 10.20 "	99.8												
11, 2.00 p.m.	100.												
11, 4.20 "	100.												
11, 10.20 "													

April													
14, 9.00 a.m.	101.3												
14, 12.30 p.m.	101.3												
14, 4.30 "	101.9												
14, 6.30 "	101.9												
14, 9.30 "	101.5												
15, 9.00 a.m.	100.												
15, 2.00 p.m.	101.4												
15, 5.40 "	103.												

April													
20, 9 00 a.m.	101.5												
20, 3.00 p.m.	102.1												
20, 7.00 "	103.												

TABLE No. II.

EXPERIMENTS WITH MALLEIN.

	I.	Glandered, No. 7.	II. Glandered. Reinjected (2). No. 7.		Healthy, No. 8.	III.	Farcy, No. 10.	Healthy, No. 9.	IV.	Glandered. Reinjected (3) No. 7.	Farcy, Reinjected (2) No. 10.	Healthy, Reinjected (2) No. 8.	Healthy, Reinjected (2) No. 9.	Healthy, No. 11.	Healthy, No. 12.	V.	Farcy, Reinjected (3) No. 10.	Glandered, No. 14.	Healthy, Reinjected (3) No. 8.	Healthy, No. 13.	Healthy, No. 15.	VI.	Glandered, Reinjected (2) No. 14.	Healthy, Reinjected (2) No. 13.	Healthy, No. 16.
Before Injection.	December	TEM.	January	TEM.	TEM.		TEM.	TEM.	February	TEM.	TEM.	TEM.	TEM.	TEM.	TEM.	February	TEM.	TEM.	TEM.	TEM.	TEM.	February	TEM.	TEM.	TEM.
	11, 7.00 a.m.	100.2	26, 4.30 p.m.	100 6	100.4				7, 9.00 a.m.	100.8	100.	99.4	100.	100.5	99.8	12, 9.00 a m.	100.	102.4	100.	100.6	101.8°	17, 9.00 a.m.	103.6	99.6	98.8
	11, 10.00 "	100.7	27, 8.00 a.m.	99.8	98.2				7, 1.00 p.m.	101.2	100.	100.	100.6	101.2	100.2	12, 1.00 p.m.	101.	101.6	100 5	101.	102.	17, 1.00 p.m.	103.	99.8	99.5
	11, 1.00 p.m.	100.8	27, 10.00 "	100.2	99.2				7, 5.00 "	101.2	100.2	99.8	100.5	101.2	99.8	12, 5.00 "	101.6	101.8	99.8	100.6	101.6	17, 5.00 "	103.	100.6	100.
	11, 4.00 "	101.	27 1.00 p.m.	100.2	99.4																	18, 8.00 a.m.	101.5	99.	98.6
	11, 7.00 "	100.8	27, 4.30 "	100.2	99.8																				
	11, 10.00 "	100.6																							
		2c.c.		1c.c.	1c.c.		1c.c.	1c.c.		1c.c.	1c.c.	1c.e.	1c.c.	1c.c.	1c.c.		1c.c.	1c.c.	3c.c.	1c.c.	1c.c.		1c.c.	1c.c.	1c.c.
When Injected.	December		January			February			February							Febtuary						February			
	12, 7.00 a.m.	100.6	28, 8,30 a.m.	100.2	99.4	1, 9.00 a.m.	99.5	98.	8, 8.00 a.m.	99.9	99.8	99.6	100.	101.	100.	13, 8.00 a.m.	100.2	101.3	100.4	100.4	101.6	18, 10.00 a.m.	101.2	99.2	98.9
	12, 10.00 "	102.4	28, 10.15 "	101.2	99.8	1, 10.30 "	100.2	99.8	8, 10.00 "	100.8	100.6	100.	100.5	101.2	99.8	13, 10.00 "	100.6	101.6	99.	100 6	100.8	18, 12.00 m.	101.	99.8	98.9
	12, 11.30 "	103.8	28, 11.15 "	102.4	101.4	1, 12.00 m.	100.	99.2	8, 12.00 m.	101.4	100.2	100.	100.2	100.8	100.2	13, 12 00 m.	101.8	102.2	100 5	100.8	101.8	18, 2.00 p.m.	102.2	100.2	99.8
	12, 12.30 p.m.	104.2	28, 1.00 p.m.	102.2	101.8	1, 3.00 p.m.	101.2	100.3	8, 3.00 p.m.	103.3	102.6	100.6	100.2	100.4	100.	13, 2.00 p.m.	103.2	104.8	100.8	101.6	102.8	18, 4.00 "	102.2	100.6	99.4
	12, 1.30 "	104.6	28, 4.00 "	103.5	101.5	1, 6.00 "	102.	100.8	8, 6.00 "	103.6	104.	100.4	101.	100.8	100.	13, 5.00 "	103.8	105.	99.4	101.2	101.5	18, 7.00 "	101.8	100.2	99.
	12, 2.30 "	105.2	28, 7.00 "	103.	103.2	1, 9.00 "	103.2	101.8	8, 9.00 "	104.	103.4	100.	100.8	101.2	100.2	13, 10.0° "	104.4	105.	100.4	102.	101.2	18, 10 00 "			98.8
	12, 4.00 "	105.3				1, 11.00 "	105.	102.6	8, 12.00 mid.	103.	103.2	99.6	101.8	101.2	100.4	13, 12.00 mid.									
	12, 5.00 "	105.1																							
	12, 9.30 "	104.5																							
		Very large swelling.		Very large swelling.		Slight swelling.	Large swelling.	Very slight swelling.	Large swelling.	Large swelling.	No swelling.	No swelling.	No swelling.	No swelling.		Large swelling.	Very large swelling.	No swelling.	No swelling.	No swelling.		Large swelling.	No swelling.	No swelling.
After Injection.	December		January			February			February							February						February			
	13, 7.30 a.m.	103,2	29, 8.00 a.m.	101.6	100.	1, 9.00 a.m.	100.4	100.2	9, 8.00 a.m.	102.2	100.6	100.2	99.8	100.5	100.1	14, 8.00 a.m.	101.4	103.4	100 4	100.	101.0	19, 8 00 a.m.	101.5	99.8	99.6
	13, 10.00 "	102.6	29, 10.00 "	101.6	101.2	2,		101.	9, 1.00 p.m.	103.	101.2	99.8	100.9	100.8	99.8	14, 1.00 p.m.	101.8	104,	99.	100.6	101.6	19, 1.00 p.m.	101.5	100.	100.2
	13, 1.00 p.m.	102.5	29, 1.00 p.m.	102.9	100.9	2, 8.00 "	103.2	100.6	9, 5.00 "	102.8	102.2	100.6	100.8	101.2	100.	14, 5.00 "	102.	103.2	100.8	100.6	101.6	19, 5.00 "	102.4	99.8	99.8
	13, 4.00 "	102.	29, 4.00 "	101.6	100.8	2, 10.30 "	102.8	100.4	10, 8.00 a.m.	101.	101.	98.4	101.2	101.2	100.	15, 8.00 a.m.	100.6	103.2	100.6	100.2	101.6	20, 8.00 a.m.	103.6	100.	99.4
	13, 9.30 "	101.6	29, 7.00 "	102.2	99.6	2, 1.00 p.m.	102.8	100.1	10, 1.00 p.m.	101.3	101.2	99.8	100.8	101.3	99.8	15, 1.00 p.m.	100.	102.6	99.	100.6	100.6	20, 1.00 p.m.	103.2		100.4
	14, 8.00 a.m.	101.6	30, 8.00 a.m.	101.	101.2	2, 4.00 "	103.	100.8	10, 6.00 "	101.4	101.	100.4	100.8	101.2	100.2	15, 5.00 "	100.6	103.8	99.9	100.9	101.2	20, 5.00 "	103.8		
	14, 1.00 p.m.	102.	30, 10 00 "	101.6	101.5	2, 8.20 "	103.	101.2								16, 8.00 a.m.	100.	102.8	99 9	100.6	100.9	21, 8.00 a.m.	102.6		
	14, 5.00 "	101.2	30, 1.00 p.m.	101.2	101.2	3, 8.00 a.m.	102.2	101.								16, 12.00 m.	100.	102.8	100.	100.2	101.	21, 5.00 p.m.	102.2		
	15, 8.00 a.m.	100.2	30, 4.00 "	101.5		3, 10.00 "	102.2	101.3								16, 5.00 p.m.	100.	102.4	99.8	99.8		22, 8.00 a.m.	103.8		
			31, 8.30 a.m.	100.	100.	3, 2.00 p.m.	101.6																		

TABLE No. III.

EXPERIMENTS WITH MALLEIN.

TABLE No. III.

EXPERIMENTS WITH MALLEIN.

	VII.	Glandered. Reinjected (4) No. 7.	Glandered. Reinjected (3) No. 14.	Healthy. Reinjected (2) No. 16.	Healthy, No. 17.
Before Injection.	DATE.	TEM.	TEM.	TEM.	TEM.
	Feb. 22, 9.00 a.m.	99.8	103.8	98.5	98.4
	" 22, 5.00 p.m.	99.6	103.8	100.	100.5
	" 23, 8.00 a.m.	99.4	102.8	99.2	100.2
	" 23, 1.00 p.m.	99.8	102.8	99.8	100.
	" 23, 5.00 "	101.1	103.2	99.8	101.4
	" 24, 8.00 a.m.	100.	102.2	99.5	100.
		1c.c.	1c.c.	1c.c.	1c.c.
When Injected.	Feb. 24, 10.00 a.m.	100.2	102.2	99.4	100.4
	" 24, 12.00 m.	100.2	102.2	99.8	99.5
	" 24, 2.00 p.m.	100.4	102.	100.	100.
	" 24, 4.00 "	100.4	102.4	100.4	101.1
	" 24, 6.00 "	101.2	102.4	99.6	101.2
	" 24, 8.00 "	100.2	103.2	98.5	100.8
	" 24, 10.30 "	102.5	102.8	99.7	101.1
After Injection.		Large Swelling.	Large swelling.	No swelling.	No swelling.
	Feb. 25, 1.00 a.m.	102.5	102.6	99.8	101.5
	" 25, 8.00 "	101.	102.7	99.5	99.8
	" 25, 1.00 p.m.	101.6	103.2	99.4	100.4
	" 25, 5.00 "	102.6	103.2	99.8	100.
	" 26, 8.00 a.m.	101.6	102.8	99.8	100.4
	" 26, 1.00 p.m.	102.	103.6	100.2	100.6
	" 26, 5.00 "	101.4	103.2	99.4	100.6

	VIII.	Glandered, No. 19.	Healthy, No. 18.
Before Injection.	DATE.	TEM.	TEM.
	Mar. 30, 1.00 p.m.	101.4	99.6
	" 30, 6.00 "	101.4	101.
		1c.c.	1c.c.
When Injected.	Mar. 31, 6.00 a.m.	101.6	99.4
	" 31, 8.00 "	101.2	99.
	" 31, 10.00 "	101.4	99.3
	" 31, 12.00 m.	102.	99.1
	" 31, 2.00 p.m.	102.9	100.
	" 31, 4.00 "	102.9	100.2
	" 31, 6.00 "	103.4	100.4
	" 31, 8.00 "	104.	100.9
	" 31, 10.00 "	103.8	100.2
After Injection.		Very Large Swelling.	No swelling.
	Apr. 1, 7.30 a.m.	103.7	99.3
	" 1, 10.00 "	103.	99.8
	" 1, 1.00 p.m.	103.	99.1
	" 1, 5.00 "	103.	99.8
	" 2, 7.00 a.m.	101.4	99.2

	IX.	Glandered. Reinjected (2) No. 19.	Healthy. Reinjected (2) No. 18.
Before Injection.	DATE.	TEM.	TEM.
	Apr. 4, 8.00 a.m.	101.1	99.
	" 4, 1.00 p.m.	100.8	100.8
	" 4, 1.30 "		100.3
	" 4, 5.00 "	102.2	99.
	" 5, 8.00 a.m.	101.5	98.8
	" 5, 1.00 p.m.	101.	99.
	" 5, 5.00 "	101.8	100.4
		1c.c.	1c.c.
When Injected.	Apr. 6, 6.00 a.m.	102.4	99.4
	" 6, 8.00 "	102.6	99.
	" 6, 10.00 "	102.7	99.2
	" 6, 12.00 m.	102.1	99.6
	" 6, 2.00 p.m.	102.8	99.6
	" 6, 4.00 "	102.8	99.6
	" 6, 6.00 "	102.4	100.4
	" 6, 8.00 "	102.4	100.5
	" 6, 10.00 "	103.4	100.4
After Injection.		Slight Swelling.	No swelling.
	Apr. 7, 8.00 a.m.	102.	99.2
	" 7, 12.00 m.	101.	99.

	X.	Glandered. Reinjected (3) No. 19.	Healthy. Reinjected (2) No. 11.
Before Injection.	DATE.	TEM.	TEM.
	Apr. 25, 9.00 a.m.	101.	100.2
	" 25, 1.00 p.m.	101.3	100.5
	" 25, 5.00 "	102.4	101.
		1c.c.	1c.c.
When Injected.	Apr. 26, 6.00 a.m.	103.6	99.4
	" 26, 8.00 "	103.	100.2
	" 26,10.00 "	102.8	101.2
	" 26, 12.00 m.	102.4	101.8
	" 26, 2.00 p.m.	102.	101.8
	" 26, 4.00 "	102.2	101.4
	" 26, 6.00 "	102.8	100.5
	" 26, 8.00 "	102.	100.
	" 26,10.00 "	102.8	100.
After Injection.		Slight Swelling.	No swelling.
	Apr. 27, 7.30 a.m.	101.6	100.
	" 27, 10.00 "	101.4	100.6
	" 27, 1.00 p.m.	102.4	100.6

	XI.	Farcy, No. 20.	Healthy. Reinjected (2) No. 15.
Before Injection.	DATE.	TEM.	TEM.
	May 23, 8.00 a.m.	100.4	101.*
	" 23, 12.00 m.	100.2	100.8
	" 23, 5.00 p.m.	99.5	99.5
		1c.c.	1c.c.
When Injected.	May 24, 6.00 a.m.	100.	101.2
	" 24, 8.00 "	100.2	100.6
	" 24, 10.00 "	100.2	100.6
	" 24, 12.00 m.	100.6	100.8
	" 24, 2.00 p.m.	102.4	101.2
	" 24, 4.00 "	103.4	102.
	" 24, 6.00 "	103.8	101.8
	" 24, 8.00 "	104.8	102.4
	" 24, 10.00 "	104.9	101.8
After Injection.		Large Swelling.	Slight swelling.
	May 25, 6.00 a.m.	103.	100.8
	" 25, 9.00 "	102.8	100.4
	" 25, 12.00 m.	102.	100.8
	" 25, 3.00 p.m.	102.2	101.2
	" 25, 6.00 "	101.8	100.5
	" 26, 6.00 a.m.	102.6	100.4

	XII.	Farcy, Reinjected (2) No. 20.	Farcy, No. 21.	Healthy, Reinjected (3) No. 15.
Before Injection.	DATE.	TEM.	TEM.	TEM.
	May 27, 12.00 m.	101.2	100.8	100.4
	" 27, 5.00 p.m.	102.4	100.4	100.4
		1c.c.	1c.c.	1c.c.
When Injected.	May 28, 6.00 a.m.	101.6	100.6	100.4
	" 28, 8.00 "	101.4	100.	100.2
	" 28, 10.00 "	102.	100.	100.2
	" 28, 12.00 m.	101.4	100.	100.6
	" 28, 2.00 p.m.	101.6	101.5	100.8
	" 28, 4.00 "	101.8	102.6	101.
	" 28, 6.00 "	101.8	104.3	101.7
	" 28, 8.00 "	101.8	104.4	101.5
	" 28, 10.00 "	101.7	104.4	101.6
After Injection.		Very Large Swelling.	Large swelling.	Swelling.
	May 29, 6.00 a.m.	102.4	101.6	101.
	" 29, 12.00 m.	102.9	101.4	101.2
	" 29, 5.00 p.m.	103.2	102.6	101.
	" 30, 6.00 a.m.	101.8	100.8	101.
	" 30, 5.00 p.m.	102.6	102.4	

* Mare in heat.

TABLE No. IV.

EXPERIMENTS WITH 0.5 c.c. MALLEIN.

	I.				II.				III.			
	DATE.	Healthy, No. 27.	Glandered, No. 26.	Glandered, No. 25.	DATE.	Swelling.	Large Swelling.	Swelling barely perceptible.	DATE.	Farcy, Reinjected (9) No. 20.	Farcy, Reinjected (7) No. 21.	Glandered, Reinjected (2) No. 34.
		TEM.	TEM.	TEM.		TEM.	TEM.	TEM.		TEM.	TEM.	TEM.
Before Injection.	July 10, 8.00 a.m.			101.2	Aug. 26, 6.00 a.m.	99.4			Aug. 29, 7.00 a.m.	100.	99.4	100.8
	" 10, 5.00 p.m.			101.4	" 26, 12.00 m.	99.4			" 29, 1.00 p.m.	100.2	99.8	102.2
	" 11, 8.00 a.m.		102.	101.4	" 26, 6.00 p.m.	100.			" 29, 6.00 "	100.2	100.2	102.
	" 11, 1.00 p.m.	99.6	101.8	101.4							103.	102.8
	" 11, 6.00 "	99.8	101.8	101.6								
	" 11, 6.00 "	99.4										
		Injected 0.5 c.c.			Injected 0.5 c.c.				Injected 0.5 c.c.			
When Injected.	July 12, 6.00 a.m.	99.4	101.2	101.2	Aug. 27, 6.00 a.m.	99.6	99.4	102.	Aug. 30, 6.00 a.m.	99.4	99.2	102.4
	" 12, 8.00 "	99.2	100.6	101.8	" 27, 8.00 "	99.8	99.7	101.8	" 30 8.00 "	99.8	100.8	102.7
	" 12, 10.00 "	99.8	101.2	101.4	" 27, 10.00 "		100.3	101.3	" 30, 10.00 "	100.4	101.4	102.5
	" 12, 12.00 m.	99.2	101.8	101.6	" 27, 12.00 m.	100.8	101.3	102.1	" 30, 12.00 m.	101.4	102.9	102.7
	" 12, 2.00 p.m.	99.4	103.4	103.	" 27, 2.00 p.m.	101.2	102.7	103.	" 30, 2.00 p.m.	101.4	104.6	103.2
	" 12, 4.00 "		104.2	103.4	" 27, 4.00 "	102.8	103.2	103.6	" 30, 4.00 "	101.	104.6	103.5
	" 12, 6.00 "		103.8	103.2	" 27, 6.00 "	103.	103.6	103.7	" 30, 6.00 "	101.4	101.1	103.4
	" 12, 8.00 "	99.	103.2	104.	" 27, 8.00 "	103.	103.6	104.1	" 30, 8.00 "	101.3	103.4	103.8
	" 12, 10.00 "	99.8	102.5	103.8	" 27, 10.00 "	103.	101.	101.	" 30, 10.00 "		103.	103.2
After Injection.	July 13, 6.00 a.m.	101.	100.	100.2	Aug. 28, 6.00 a.m.	101.4	101.	102.4	Aug. 31, 6.00 a.m.	99.8	100.6	102.
	" 13, 12.00 m.		101.6	100.4	" 28, 1.00 p.m.	102.9	102.9	102.2	" 31, 1.00 p.m.	100.7	100.4	102.4
	" 13, 6.00 p.m.		102.8	100.6	" 28, 6.00 "	101.6	101.6	103.1	" 31, 6.00 "	100.4	101.8	101.8
	" 14, 8.00 a.m.		100.7	99.8	" 29, 7.00 a.m.	100.	99.4	100.8				
	" 14, 4.00 p.m.		100.2	100.	" 29, 1.00 p.m.	100.2	99.8	102.2				
	" 15, 7.00 "		99.8	100.2	" 29, 6.00 "	100.2	100.2	103.				

	IV.				V.				VI.			
	DATE.	Slight Swelling.	Slight Swelling.	Slight Swelling.	DATE.	Small Swelling.	Large Swelling.	Slight Swelling.	DATE.	Large Swelling.	Slight Swelling.	Faint Swelling.
		TEM.	TEM.	TEM.		TEM.	TEM.	TEM.		TEM.	TEM.	TEM.
Before Injection.	July 10, 8.00 a.m.	99.6	100.2	99.6	Aug. 26, 6.00 a.m.	99.4	99.2	100.2	Aug. 29, 7.00 a.m.	99.2	99.2	100.4
	" 10, 5.00 p.m.	99.9	100.4	100.	" 26, 12.00 m.	99.6	99.4	100.2	" 29, 1.00 p.m.	99.6	100.	100.8
	" 11, 8.00 a.m.	99.2	99.8	100.	" 26, 6.00 p.m.	99.6	99.4	100.2	" 29, 6.00 "	99.8	101.2	100.4
	" 11, 1.00 p.m.	99.8	100.	100.2								
	" 11, 6.00 "	99.4										
		Injected 0.5 c.c.			Injected 0.5 c.c.				Injected 0.5 c.c.			
When Injected.	July 12, 6.00 a.m.	99.4	99.4	99.2	Aug. 27, 6.00 a.m.	99.4	99.2	100.2	Aug. 30, 6.00 a.m.	99.4	99.2	100.
	" 12, 8.00 "	99.2	99.1	99.7	" 27, 8.00 "	99.1	99.1	99.7	" 30 8.00 "	99.8	100.8	102.7
	" 12, 10.00 "	99.8	99.9	100.3	" 27, 10.00 "	99.	99.8	99.9	" 30, 10.00 "	100.4	101.4	102.5
	" 12, 12.00 m.	99.2	99.4	99.9	" 27, 12.00 m.	99.4	99.9	100.4	" 30, 12.00 m.	101.4	102.9	102.7
	" 12, 2.00 p.m.	99.4	99.8	100.6	" 27, 2.00 p.m.	99.8	100.6	100.2	" 30, 2.00 p.m.	101.4	104.6	103.2
	" 12, 4.00 "		100.4	100.5	" 27, 4.00 "	100.5	101.	100.4	" 30, 4.00 "	101.	104.6	103.5
	" 13, 6.00 "		100.5	101.4	" 27, 6.00 "	101.2	101.4	101.2	" 30, 6.00 "	101.4	101.1	103.4
	" 12, 8.00 "	99.	100.4	101.1	" 27, 8.00 "	103.6	101.1	101.4	" 30, 8.00 "	101.3	103.4	103.8
	" 12, 10.00 "	99.4	101.5	100.4	" 27, 10.00 "	103.6	101.	101.5	" 30, 10.00 "		103.	103.2
After Injection.	July 13, 6.00 a.m.	99.9	100.2	100.2	Aug. 28, 6.00 a.m.	101.2	100.4	100.3	Aug. 31, 6.00 a.m.	99.8	100.6	102.
	" 13, 12.00 m.	99.8	100.8	100.3	" 28, 1.00 p.m.	100.8	100.3	99.8	" 31, 1.00 p.m.	100.7	100.4	102.4
	" 13, 6.00 p.m.	99.8	100.8	100.2	" 28, 6.00 "	100.8	100.2	100.2	" 31, 6.00 "	100.4	101.8	101.8
	" 14, 8.00 a.m.			100.2				99.8				
	" 14, 4.00 p.m.			100.				99.8				
	" 15, 7.00 "			100.4				100.2				

	VII.				VIII.				IX.			
	DATE.	Healthy, No. 33.	Healthy, No. 36.	Healthy, No. 38.	DATE.	Healthy, No. 37.	Healthy, No. 38.	Healthy, No. 39.	DATE.	Glandered, No. 39.	Glandered, No. 40.	Glandered, No. 41.
		TEM.	TEM.	TEM.		TEM.	TEM.	TEM.		TEM.	TEM.	TEM.
Before Injection.	July 10, 8.00 a.m.	99.2	99.6	100.2	Aug. 26, 6.00 a.m.	99.6	100.2	99.4	Aug. 29, 7.00 a.m.	99.4	99.2	100.2
	" 10, 5.00 p.m.	99.2	99.6	100.	" 26, 12.00 m.	99.8	100.	99.6	" 29, 1.00 p.m.	99.8	99.8	100.2
	" 11, 8.00 a.m.	99.2	99.6	100.	" 26, 6.00 p.m.	99.8	100.	99.6	" 29, 6.00 "	99.8	99.8	100.2
	" 11, 1.00 p.m.	99.4	99.6	100.								
	" 11, 6.00 "	99.4	99.6	100.								
		Injected 0.5 c.c.			Injected 0.5 c.c.				Injected 0.5 c.c.			
When Injected.	July 12, 6.00 a.m.	99.4	99.6	100.2	Aug. 27, 6.00 a.m.	99.4	99.6	100.2	Aug. 30, 6.00 a.m.	99.4	99.2	100.
	" 12, 8.00 "	99.2	99.6	100.2	" 27, 8.00 "	99.2	99.6	100.2	" 30 8.00 "	99.6	99.4	100.
	" 12, 10.00 "	99.4	99.6	100.2	" 27, 10.00 "	99.4	99.6	100.2	" 30, 10.00 "	99.6	99.4	100.
	" 12, 12.00 m.	99.4	99.6	100.2	" 27, 12.00 m.	99.4	99.6	100.2	" 30, 12.00 m.	99.6	99.4	100.
	" 12, 2.00 p.m.	99.4	99.6	100.2	" 27, 2.00 p.m.	99.4	99.6	100.2	" 30, 2.00 p.m.	99.6	99.4	100.
	" 12, 4.00 "	99.4	99.6	100.2	" 27, 4.00 "	99.4	99.6	100.2	" 30, 4.00 "	99.6	99.4	100.
	" 13, 6.00 "	99.4	99.6	100.2	" 27, 6.00 "	99.4	99.6	100.2	" 30, 6.00 "	99.6	99.4	100.
	" 12, 8.00 "	99.4	99.6	100.2	" 27, 8.00 "	99.4	99.6	100.2	" 30, 8.00 "	99.6	99.4	100.
	" 12, 10.00 "	99.4	99.6	100.2	" 27, 10.00 "	99.4	99.6	100.2	" 30, 10.00 "	99.6	99.4	100.
After Injection.	July 13, 6.00 a.m.	99.4	99.6	100.2	Aug. 28, 6.00 a.m.	99.4	99.6	100.2	Aug. 31, 6.00 a.m.	99.6	99.4	100.
	" 13, 12.00 m.	99.4	99.6	100.2	" 28, 1.00 p.m.	99.4	99.6	100.2	" 31, 1.00 p.m.	99.6	99.4	100.
	" 13, 6.00 p.m.	99.4	99.6	100.2	" 28, 6.00 "	99.4	99.6	100.2	" 31, 6.00 "	99.6	99.4	100.
	" 14, 8.00 a.m.	99.4	99.6	100.2								
	" 14, 4.00 p.m.	99.4	99.6	100.2								
	" 15, 7.00 "	99.4	99.6	100.2								

TABLE No. V.

TABLE No. V.

EXPERIMENTS WITH ALBUMOSE.

	I.						II.						III.					
		Farcy, Reinjected (5) No. 20.		Farcy, Reinjected (4) No. 21.		Glandered, Reinjected (3) No. 23.		Healthy, Reinjected (5) No. 11.		Healthy, Reinjected (3) No. 17.		Farcy, Reinjected (6) No. 20.		Farcy, Reinjected (5) No. 21.		Glandered, Reinjected (4) No. 23.		Glandered, Reinjected (2) No. 26.		Healthy, Reinjected (2) No. 24.		Healthy, No. 30.		Farcy, Reinjected (7) No. 20.		Glandered, No. 31.		Healthy, No 29.		Healthy, Reinjected (2) No. 30.	
	DATE.	TEM.		TEM.		TEM.		TEM.		TEM.		DATE.	TEM.	TEM.		TEM.		TEM.		TEM.		TEM.		DATE.	TEM.		TEM.		TEM.		TEM.	
Before Injection.	July 11, 8.00 a.m.	101.		100.2		100.2		99.2		99.		July 21, 6.00 a.m.	99.4		99.5		100.6		99.		99.8		99.		101.		101.2		99.5		100.5	
	" 11, 1.00 p.m.	101.2		100.6		101.		100.4		100.7		" 21, 12.00 m.	99.		100.8		101.5		100.4		99.6		100.		100.2		103.		101.5		100.6	
	" 11, 6.00 "	100.6		100.2		100.6		100.4		100.8		" 21, 5.00 p.m.	98.8		100.6		100.5		102.		101.		99.5		100.		101.8		101.3		101.2	
		.005 grm. Alb.											.002 grm. Alb.												.002 grm. Alb.							
When Injected.	July 12, 6.00 a.m.	100.		99.4		99.5		100.4		100.		July 22, 6.00 a.m.	99.8		100.		100.8		100.		99.2		99.5		July 27, 6.00 a.m.	100.5		100.2		101.6		100.6	
	" 12, 8.00 "	100.8		99.9		100.6		100.3		100.2		" 22, 8.00 "	101.4		99.2		100.8		100.		99.6		99.		" 27, 10.00 "	100.6		101.4		102.8		100.8	
	" 12, 10 00 "	101.		100.		100.8		100.8		101.		" 22, 10.00 "	102.6		100.8		102.		100.8		100.		99.4		" 27, 12.00 m.	100.8		102.				99.8	
	" 12, 12.00 m.	102.		101.		102.6		101.4		101.		" 22, 12.00 m.	101.8		101.		102.		100.5		99.8		100.2		" 27, 2.00 p.m.	101.4		103.		103.		101.	
	" 12, 2.00 p.m.	104.		103.4		104.2		103.		100.9		" 22, 2.00 p.m.	104.2		102.2		102.6		100.8		99.8		101.		" 27, 4.00 "	101.8		104.		102.8		101.5	
	" 12, 4.00 "	103.4		104.7		101.6		103.3		101.		" 22, 4.00 "	104.2		102.2		103.		103.2		100.		100.5		" 27, 6.00 "	101.5		104.2		102.4		101.4	
	" 12, 6.00 "	104.5		104.5		104.8		102.8		101.2		" 22, 6.00 "	104.		102.8		103.6		103.		99.8		100.6		" 27, 10.00 "	102.		103.8		101.5		101.7	
	" 12, 8.00 "	104.2		105.8		105.2		102.8		102.		" 22, 6.00 "	104.2		102.5		104.		103.8		99.4		102.6									
	" 12, 10.00 "	105.		105.6		104.6		101.8		101.5		" 22, 10.00 "																				
After Injection.		Swelling.		Swelling.		Swelling.		Slight Swelling.		Slight Swelling.			Small Swelling.		Small Swelling.		Large Swelling.		Large Swelling.		No Swelling.		Slight Swelling.		Small Swelling.		Large Swelling.		No Swelling.		Slight Swelling.	
	July 13, 6.00 a.m.	103.6		104.		104.		100.		99.2		July 23, 6.00 a.m.	100.8		101.6		102.8		101.8		100.1		99.5		July 28, 6.00 a.m.	101.2		101.8		100.2		100.	
	" 13, 12.00 m.	103.8		105.		103.6		100.8		101.																102.		101.7		101.2		100.2	
	" 13, 6.00 p.m	102.5		104.4		103.6		100.2		101.4																						
	" 14, 8.00 a.m.	100.8		101.4		102.3		100.2		99.8																						
	" 14, 4.00 p.m.	100.6		102.		102.4		100.6		100.8																						
	" 15, 7.00 a.m.	100.2		100.5		100.6		100.8		100.																						

CASES OF FAVUS CONTAGION FROM THE LOWER ANIMALS.

By S. Sherwell, M.D.,

Clinical Professor of Dermatology, Long Island College Hospital; Attending Physician, Brooklyn Hospital; Surgeon to Skin and Throat Department, Brooklyn Eye and Ear Hospital.

It has occurred to me that the brief relation of several cases (four in the same family) of favus contagion from lower animals, might be of some interest to the Society, in view first of the prompt and easy recognition of the disease, and the equally clear chain of evidence in connection with the transmission thereof.

Mr. A———, a gentleman living in a suburban villa near Brooklyn, to whom I have previously been of service in relieving him of a chronic skin affection, came to me in great perturbation of spirit, December 3, 1891, bringing with him his two daughters, aged respectively about ten and twenty years, each of whom, otherwise in magnificent health, was suffering from a skin lesion or eruption of recent date, and in both of whom the lesions were similar in situ, that is to say, on arms, neck and bust. The symptoms were much more marked in the case of the eldest, who, when arms were exposed, showed a patch of favus eruption on upper and outer aspect of arms near deltoid region, particularly inflamed and covered with sparse but evident scutula of the achorion—the other patches in regions mentioned above, while evidently of the character of vegetable parasitic order, were not so well marked, nor were they in the younger sister.

Recognizing the lesion, as it was easy to do at sight, I instituted inquiry as to whether they, the family, kept any pet animals, and was told in reply that they had three dogs, great favorites, the smallest of which, a Scotch terrier, was the special pet of the elder young lady, even sleeping on her bed and being constantly with her, and being fondled by her; the other dogs, a setter and a hound respectively, also were made much of by the whole famiy, and admitted freely to house, etc. On asking if they did not scratch themselves a good deal was assured they did, of late particularly, acting as if

they had fleas, but they had, on examination, not been able to find that they were so infested; on further questioning, found that they had noticed, however, a poor condition of their coats, and on the little dog a patch behind the ear where the skin appeared frayed, mouldy or mangy.

On question as to vermin about house, found they suffered from a veritable plague of rats and mice, particularly the latter, that they were quite bold, making their nests everywhere, and that traps were of little service in thinning their numbers, and that they had feared to use poisons on account of the dogs, and, furthermore, that a curious circumstance had lately happened—that one of the dogs had caught and been found playing with a poor sick mouse (from the description evidently, one affected with severe favus eruption), which they in the goodness of their hearts rescued from the dogs, and in sheer pity for its miserable state allowed to escape.

The case was clear; after making explanation of the character of the lesions, and their connection with the animals, I ordered the dogs to be sent away, quarantined, and treated by veterinary surgeon of the neighborhood, further directing them to use traps, poisons, etc., in fact everything possible to diminish the number of the rodents, and to exterminate them if possible, all of which was instantly set about. I instituted treatment of the cases in the family itself. The mother and a young son were also found to be affected. The remedies used were ol. cadini, a few drops in a one-half ounce each of ol. hydrarg., five per cent. and ol. amydal. dulc, this to be fairly applied after scouring with liniment saponis, somewhat dilute, directing also the scalp and other capillary regions to be anointed in moderate degree with the same union of oils. The cases all did satisfactorily, and in short time, so that up to present date nothing more has been heard of recurrence of that or similar lesions. The dogs, after about two months' quarantine and treatment, are now also in perfect dermic health.

I had asked the family to send me specimens of the sick mice if they caught any in traps, etc. They sent me two very marked cases, with eruption most pronounced on head

in both, but one affected in spots over fully one-half of surface—one of which (the first and lightest case), seeing that Unna, of Hamburg, had been doing a good deal of microscopic work about that time on the achorion, I sent him, having previously gutted it and rubbed in a little arsenious acid in abdominal cavity, enclosing it, as dry specimen, together with preparation in small bottle of alcohol of a piece of sarcomatous tumor, he had by letter requested me for. Later on, February, 1892, I received a letter from him, saying that while it was undoubtedly favus, it had some unusual features of microscopic growth differing from his well known classification of F. griseus, F. celerior and F. sulphureus tardus. He sent as well a couple of tubes of pure cultures made therefrom, which have been examined by various members of New York Dermatological Society, but which, to my less expert vision have no essential difference from that of other favus. Certainly the microscopic appearance on the young lady's arm was as distinct as well could be, typically yellow and cupped.

I have had several cases in my practice of this parasitic disease, evidently from contagion from the lower animals, and beg to offer a photograph of one. A stableman being the patient, the patch in this case, as will be seen, is under the eye, sharply defined isolated lesion; the scutula were absolutely typical and perfect. I scraped this case with dermal curette, and applied liq. hydrargyri nitralis mildly, with cure following as a matter of course. In this case also, I asked him to trap and bring me any affected rats or mice he could get, with the result that two or three days thereafter he brought me a mouse, which I yet have in case, mounted by a taxidermist of the vicinity. The patch in this case is of grayish yellow, and as in all cases I have seen is on the head. I have invariably found the head and cheek the most affected part (in mice), whatever other regions were attacked, and this is a point which has for many years interested me.

It would appear that the irritation caused by the presence and growth of the fungus is very great in these lower animals, and must lead apparently to almost continuous

scratching on their part, so that in the case of these mice when the head is affected, which I have found invariable, they scratch and scratch, until not only the skin and subcutaneous tissues are eroded, but even by the combined influence of the irritation and scratching, I have found the calvarium in places destroyed and the parasite affecting the brain and its membranes, so that the little animals became wild with the irritation and inflammation set up.

I remember very well many years since, in the family of a distinguished jurist, among my clientéle, the young ladies of the family, braver than ordinary, were wont to make fun of a family of what they called crazy mice, who would come out when people were present, run up window curtains, and do all manner of objectless things apparently, who had no fear when pursued, but would allow themselves to be caught with the hands, etc. They, at my request, sent me one. Its head was covered with the favus crust, the calvarium worn away to large extent, cerebrum exposed and apparently affected. No cases of contagion appeared in the family, and measures were soon adopted by my advice for the destruction of the surviving rodents.

As to contagion of other cryptogamic parasites, I have seen many cases in individuals and families of trichophytosis (ringworm), cats being the infecting media. The last, only a few days since, in an infant of less than six months, a mangy little kitten picked up in the street, given to it in the crib to play and sleep with, etc. The case was brought to my clinic; at next visit the kitten was also brought at my request, and its appearance justified the diagnosis.

The most interesting case of the kind I ever had was in a Jewish family of moderate means, where the whole of a numerous family of children, the eldest a girl of about fourteen, and a little female domestic not much older, slept in the same room on pallet beds, were found to be affected with circinnate ringworm. They had also a mangy kitten, evidently the source of trouble, picked up by one of the family, and made a pet and bed companion, going to each bed as it felt like. The amount and variety of circinnate lesions were

astonishing. Some of their bodies looked like a veritable map of Polynesia. Death of the cat, and appropriate remedies were successful in these cases.

On reference to veterinary authorities, I find it stated that favus (honey-comb ringworm) has been noted also more especially as occurring in mice and rats, and in the animals who more or less make them their prey, as ferrets, cats, dogs, etc., in about the same relative order; the larger domestic animals are less frequently affected, horses seemingly least of all; the favorite sites of these parasitic growths in the latter would appear to be at and about region of the withers and bases of mane and tail. I should think, from analogy, that the hairy muzzle and roots of the ears should be carefully looked at when this disease is present, as it seems likely that a much more insignificant lesion in these situations would cause more discomfort to the animals than very much larger manifestations elsewhere. The iodide of sulphur, in combination with alkalies, seems to be the treatment most recommended by the authorities. I would venture to suggest that, as after or later treatment, at least, *constant saturation* of the parts with raw linseed oil to obviate its tendency to dry, and frequent washings with tar soap as being good treatment. Looking upon the oils in general, as I do, as in themselves parasiticides when applied, they, by their presence, preventing oxygenation of the moulds, and thus causing death of same.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."—VETERINARY RECORD.

SALICYLATE OF SODIUM.

BY CHAS. W. HEITZMAN, D.V.S.

As there seems to be a tendency for veterinarians to wean themselves from the time-honored and much abused febrifuges, it will, perhaps, be in order to suggest the above-men-

tioned as one worthy their attention. Sodium salicylate is devoid of irritant and poisonous actions, and, moreover, is without odor, and almost without taste. It resembles quinine in its actions, but its medicinal effects are more active. In acute fevers one to two drachm doses, repeated every two hours until six or eight doses are taken, lower the frequency of the pulse and decrease temperature from one to three degrees. In repeated doses it relaxes the bowels, but has no direct irritant action.

In rheumatic fevers it lowers the temperature, abates pain, and cuts short the attack. In laminitis, influenza, in fact, wherever an increase of temperature is present from constitutional disturbances, it is, more times than less, indicated. We have used it, with almost universal success, in the periodic attacks of influenza, associated with "La Grippe lung." We cite several cases in which its use was beneficial.

No. 1. Acute Rheumatism. Was called to see an English setter; found point of left hind leg swollen, hot and painful to touch. When made to move would hop on three legs. Rough coat; no appetite; mucus accumulation in the corner of the eyes; fœtid breath. Prescribed:

℞ Sodium Salicyl. ʒ ij.
Aqua distil ℥ iij.
M.

Sig.—Teaspoonful ever two (2) hours. Also citrate of iron and quinine three times daily.

In three days saw patient again; hind leg perfectly sound; appetite improved, but front leg swollen. Again put him on the salicylate, and in twelve days made a complete recovery.

Case No. 2. A medium-sized mare; owner thought she had injured knee, as it was very much enlarged. Temperature, 106° F.; knee sensitive to touch; urine scanty and high-colored; bowels costive; no appetite. Prescribed two drachms of the salicylate every two hours; hot water applications and bandages to knee. Second day, temperature 104½°; general condition improved. Fifth day, temperature 105°; left hock swollen, painful, etc.; swelling, soreness, etc., disappeared from front leg. Continued the salicylate incessantly every two

hours for the next three days and nights. Ninth day, temperature 101°; excretions normal; appetite good; no swelling or soreness.

Case No. 4. Three colts with purpura as a sequel to catarrhal fever. Swellings about the sheath, abdomen and breast, and one considerably swollen about the head. Pulse feeble; temperature 103.6°. Prescribed iron and ergot. At the end of first week (June 7th) no improvement, except the one with swollen head passed to the great beyond. Prescribed the salicylate in alternate doses with the iron. Did not hear from them again until the latter part of July, when owner said they had completely recovered and were in fine fix.

Case No. 5. A sorrel mare attempted to jump a fence, but succeeded only in piercing her breast to the depth of thireen or fourteen inches. Was brought to the hospital as soon as she was removed from the fence. Wound was dressed daily with with antiseptics, and for four or five days did very nicely; then it began to swell; discharge became offensive; swelling extended to the mammary glands. Temperature from 103½ to 105°. Began the administration of the salicylate, and in four days temperature almost normal, and swelling about gone. In eighteen days was discharged from hospital.

EXTRACTS FROM GERMAN PERIODICALS.

By R. MIDDLETON, D.V.S., Philadelphia, Pa.

OBSERVATIONS UPON THE "RED DIARRHŒA."

Zschokke, of Zurich, received in 1890, from the district of Brauchli, a blood-mixed, slimy excrement, with the explanation that in this circuit an unknown disease of an epizootic nature had existed for some time past, and which, though not of sufficient malignancy to prove fatal, was so debilitating as to necessitate destruction.

Zschokke, in pursuance of this statement, instituted exhaustive experiments in the several towns suffering. The next summer he observed the same disease in another valley, also here existing as an epizootic.

From a meeting of the veterinary associations it was learned that this affection was then very prevalent, and that in those places where only sporadic cases were seen a short time back, it now flourished as an epizootic. From these gatherings Zschokke found the diarrhœa to be propagated throughout the whole canton of Luzerne.

Cattle going seldom upon the meadows, and especially young animals from one to one and a half years old, are affected between the months of July and September.

Most cases occur in high elevations; in these locations the malady is of greater virulence and more frequently terminates in death, than when occurring in valleys.

In spite of its epizootic character it only affects individuals of a large dairy; only one veterinarian reporting it as having attacked every animal in a collection. There is no ground to establish the probability that it is transferrable from one animal to another. The flesh of destroyed subjects is eaten without disadvantage, and is in no wise considered prejudicial to the public health.

Concerning the manifestation of any infallible symptoms, it may be said that from the ineipiency to the termination of the disease no pathognomonic sign is vouchsafed. A prodromic stage, with fever, loss of appetite and debility, which accompany all mycotic diseases, is not to be recorded.

The first and most noticeable symptom is the diarrhœa, which, in one or two days, becomes bloody. The feces are liquid, possessing a strong odor; at the beginning slimy, later, brownish and more fluid. The acme of the affection occurs in from four to eight days; at which time much trismus is noted, followed by small quantities of macerated membrane mixed with feces and coagulated blood-clots of various sizes. Prolapsus of the rectum is not seldom, in which cases the rectal membrane becomes congealed and hypersensitive. Ordinarily the blood disappears from the feces in two or three days, but the diarrhœa itself may continue as many weeks. The general health does not seem to be deteriorated by the passages. The patients imbibe food and are very thirsty; the skin becomes dry and the visible mucous mem-

branes are pale; emaciation, more especially at the flank, proceeds at a rapid rate. The eyes are retracted within the orbicular cavity early in the affection. The temperature is never dangerously high, remaining below 104°; pulse, on the other hand, is accelerated to 60, and the animals are usually weak.

In individual cases the symptoms are more severe. Huber found a one and a half year old ox lying upon the ground, very weak, with evacuations occurring every hour. Temperature, 122°; pulse, 38; stomach peristalsis retarded; intestinal sounds suspended. As the temperature subsided the pulse rate increased, until, two days later, the thermometer indicated 105.8°, the pulse, 90; the animal was slaughtered.

The weakness is a very prominent symptom, whereby the gait is made uncertain and swaying. Milk secretion reduced. Colic symptoms are not to be noted. The patients are contracted in the lumbar region and constantly change the posterior limbs. The course and termination of the affection is variable; in the majority the same subsided in five to ten days. In numerous instances medicinal aid was not indicated. In other cases, anorexia and diarrhœa extended over a period of several weeks, causing great emaciation; in these patients the usual agents availed nothing. A fatal termination is not often recorded.

Huber handled thirty-six cases, under which were ten seriously ill, and four which necessitated slaughtering. Of fifty-nine cases observed, cattle, six died apparently exhausted. The therapy consisted of mucilaginous drinks, preparations of opium, astringents and disinfectants such as creoline. In addition, dry food, meal water, bread and red-wine.

The post mortem exposed little of a distinctive nature beyond a general anæmia, erosions of the fourth stomach and large colon. The mucous membrane of the small intestine is neither swollen or reddened; it contains no abnormal fluid. Contents of the psaltery-manifolds dry and hard, as in indigestion. The colon membrane was either longitudinally creased or nodular; it was covered with thick mucous, striped with blood. By irrigating the latter membrane, small

shreds of epethelial tissue were dislodged from the mucosa. The submucosa and muscular fibers of the lower bowel were swollen, loose and congested; numerous ecchymoses were visible throughout the expanse of membrane. In the rectum numbers of blueish lines, the dilated veins, were apparent. In individual herds, wounds along the colon or rectum, which might be considered as the source of the blood in the fecal discharges, were not found.

Regarding the ætiology, it may be said that the plurality attribute the lesions to wet seasons and wet grass, and assert that in many years of drouth, when hay is fed, there is no "red diarrhœa." This, nevertheless, is not absolutely true, since the disease has also counted its victims in dry weather, and, in some seasons of exceeding wet, has not been seen. According to Huber, ranunculus acris and ægopodium prodagraria are more abundant in the years of this malady, i. e., they cause the affection. Opposed to this, Zschokke reports the affection occurring when the pastures were free of these growths. Why only one or two from a whole dairy should suffer, and others of the herd enjoy immunity, is equally as little to be explained. Contemporary literature offers no solution of the perplexity.

Zschokke discovered in the masses of blood and mucous sent him, an immense number of peculiarly refractive, round cells, possessing no nucleus; these he considered coccidien. In this relation he was confirmed by others using the Susdorf method of examination, and also by the procedure of coloring preparations advanced by Rieck in the "Dtch. Zt., f. Thier." In all examinations at subsequent periods and outbreaks, these round cells were invariably present; in the excrement of healthy animals in the same stable no such cells could be detected. The cells always possess the same morphological characteristics, and are the same size. The conclusion that some dependent relationship exists between the presence of these coccidien and the appearance of the affection is justifiable. In the shreds of membrane, by means of a 250 enlargement, there were from 50 to 100 examples of the cells in the field of vision; these were more abundant in the detached

rectal membrane. In a piece of the latter, 1 mm. long and 0.1 mm. thick, 1,500 coccidien were counted, calculating from this there would be 150,000 to the square millimeter, or 15,000,000 to the square centimeter. These coccidien are oval, and vary in thickness from 0.01 to 0.22 mm. They are homogeneous, refractive and of double contour. Haemotoxylin does not color them. When aniline colors are used, a nucleus thrice as large as that of an epethelia cell becomes visible, which completely occupies the cell. Also in coccidium oviforme and coccidium perforans, the nucleus very often disappears by becoming the same size as the cells. Zschokke did not observe the development of the cells to sporocysts.—*Schweiz. Arch., Bd.* 34, *H.* 1.

RECTAL POLYPI IN A FOAL.

In August, we were driven by the owner to see a one-year-old foal which for the last few months suffered recurrently from colic. This had lately become more intense in its attacks, so that in the weeks immediately preceding our visit, the animal declined in flesh and general health. Up to this time the usual domestic purgative medicines were given with beneficial results, and for this reason a veterinarian had not been called. The character assumed by the disease in the last few days had become more serious. The strongest anti-costive agents acted but mildly; clysters of lukewarm soap water only induced the passage of single, hard pellets of manure, covered with a whitish croupous coat.

Status Præsens.—The colt, clothed in long, lustreless hair, was in a badly nourished condition; the countenance heavy, and languid generally. Food and drink when held before the patient were untouched. When in the stall the animal continued unquiet, flexing the neck and observing the abdominal sides, now and again reclining. Upon the gluteal region and neck, small expanses of perspiration; ears and extremities cold; respiration labored, and to a slight degree increased in frequency; temperature 102.5°; pulse full, and rating 70 per minute at the maxillaris artery; visible mucous membranes

redder than normal; stomatic membrane dry and pale; peristalsis, especially of the colon, comparatively sluggish; abdomen distended and in a tympanitic state; the foal defecates at long intervals, and accompanied by sundry grunts, a few hard, small and coated pellets of feces, assuming an extended position the while, as though about to urinate.

From these observations we concluded that we had to do with colic, associated with proctitis chronica. Manual examination of the rectum exposed the cause of this chronic and apparently dangerous colic. After proceeding forward about seven inches, our further progress was impeded by a constriction of the bowel lumen, so complete as to scarcely allow the introduction of a single finger. This obstruction was constituted by six independent, pediculated tumors that threw the membrane in a fold which circumscribed the cavity. These formations, which we later determined to be polypus fibromas, were partially disintegrated by ulcers.

By judicious and continuous pressure with the oiled hand, we succeeded in passing the stricture and entering a much larger cavity of the colon, whose walls were greatly thickened. This enlargement of the lower bowel was practically the rectal reservoir; it was occupied by closely packed manure which we removed. The new formations being beyond the reach of the bistoury, and being, moreover, in a locality where hemorrhage could not easily be controlled, we decided to procure a corrugated thimble, such as is used in obstetics, and with this instrument sever the insertion of the base into the membrane.

This being done, we constructed an impromptu ecraseur, upon the spur of the moment, from the canula of a cœcal trocar and a bit of wire. By great effort, though the patient at this point was very unquiet, we succeeded in extirpating the growths. Contrary to our anticipation, a considerable hemorrhage followed, which, however, subsided after the introduction of a tuft of oakum dusted with

℞ Cupri. sulph. pulv.,
Ac. tannici pulv., aa.

After the lapse of one half hour this was removed, and the

rectum irrigated with a solution of creolin in oak bark decoction, 1:20, repeated hourly. On the first day only bran water was permitted the patient, followed on the second day by good hay.

After eight days we removed the balance of the polypi. The condition of the animal improved, and after six weeks, during which time we occasionally saw the case, was cured.—*Berliner Th. Woch. No.* 43, 92.

RETENTION CYST UPON THE EPIGLOTTIS.

A troop horse that had been taken as a reserve, only to be used during the season of maneuvers, appeared slow and inactive, ate with great deliberation, and for times together held the head extended on a horizontal line with the dorsal vertebræ.

Eight days after the departure of the troop, while being ridden at a walk, in the various exercises, the animal became weak, swayed considerable and fell; in a short time regained composure and stood.

From here the animal was taken to the nearest camp, where it again plunged to the ground and expired.

The post-mortem, undertaken on the next day, exposed no lesion of the abdominal cavity. The lungs contained air, were red in color and well supplied with blood. The larynx was nearly shut from view by a cyst of enormous dimensions, which lay over the glottis, being securely attached to the anterior surface of the epiglottis.

This formation, altogether about the size of a hen's egg, was filled with a transparent, reddish-gray fluid. The exterior also reddish in hue and wrinkled, seemed a continuation of the pharyngeal mucous membrane, while the interior possessed nothing noteworthy.

The pathological institute attached to the Berlin University, pronounced this growth to be a retention cyst—*Ztsehr. f. Vet. K.*

PARTIAL BLINDNESS FROM ACUTE ENCEPHALITIS.

On the fourteenth of August, a twelve-year-old horse exhibited symptoms of encephalitis, to wit: hanging of the head, pressure with same toward left, retarded pulse, fever and general immobility. On the third day periodic recurrences of the irritation, patient fell to the floor, arose, pulled upon the halter; contracted pupil and staring eyes.

The animal was removed from the stable to an open plot of ground, and here for four days ice bags were applied to the head, and pilocarpine injection made. On the tenth day the cerebral symptoms had subsided.

Later the same horse again came under our supervision, and at this time the right eye possessed a peculiar aspect; the ophthalmic examination yielded no lesion of the pupil, lense or conjunctiva, but upon the retina complete atrophy of the optic nerve. This is directly traceable to a disturbance of the optic centers due to the cerebritis.—*Ztsch. f. Vet. K.*

VARIOUS EXTRACTS.

By Wm. S. Gottheil, M.D.

Specially written for the American Veterinary Review.

Foot and Mouth Disease in the Human Subject. S.

Siegel (Dtsch. Med. Woch., 49, 1891) has studied an outbreak of epidemic stomatitis in the neighborhood of Britz. The symptoms were as follows: 8–10 days incubation; then chills, dizziness, pains in the gastric and hepatic regions, frequently jaundice. Temperature 101°. Mouth symptoms a week later: swelling of tongue, with yellow or black coating, swelling of gums, fetor, loosening of the teeth, painful swellings of the lower jaw bone and smaller vesicles upon the edges of the tongue and the lips, later, causing superficial erasions. An exanthem on the forearms and legs consisting of vesicles or even petechiæ was present. The fever disappears when the eruption breaks out, and, with proper treatment, the malady ends in two weeks; but weakness and rheumatic pains persist for eight weeks longer. In excep-

tional cases the disease may last a year; and in very severe attacks there occur partial necrosis of the tongue, hemorrhages from the gums, etc. The liver is always swollen, and in females menstrual irregularities are the rule.

Post mortem examinations were made of seven cases, and cultures were made from the liver, kidneys, etc. In every case a certain microbe, a short, egg-shaped bacillus, easily grown in the ordinary nutrient media, and readily stained with the usual coloring agents, was obtained. Inoculation experiments with the cultures were entirely successful. Every animal on which it was tried became affected with foot and mouth disease in more or less severe form.

The vegetable parasites—non-microbic—that are transmitted from animal to human beings, and vice versa, by R. Blanchard. (Progres Med., 1891. Nos. 50 and 52).

B. enumerates eight kinds:

1. *Achorion Arloingi* (Busquet, 1891)—transmitted from mouse to cat, and from cat to man, causing Favus.

2. *Achorion Schonleinii* (Remak, 1845)—the parasite of favus in fowls (the Epidermophyton Gallinæ of Megnin), and causing Favus Herpeticus in man.

3. *Trichophyton depilans* (Megnin, 1878)—the Ringworm of cattle, and transmitted to man as ordinary Ringworm. Gerlach has successfully inoculated the fungus on horses and dogs.

4. *Trichophyton Tonsurans* (Malmsten, 1848)—transmitted by horse, dog and cat to man.

5. *Actinomyces Bovis* (Hart, 1877)—found in man, cattle, horses and pigs. All receive it from the graminaceous plants which bear the active parasites.

6. *Microsporon Audouini* (Gruby, 1843)—the parasite of Alopecia areata. It causes the Alopecia of cattle and cats. It is transmissible from man to man, and probably from animals to man.

7. *Lepocalla repens* (Eklund, 1883)—said to be the cause of Psoriasis. Is transmitted from man to man, and also from man to animals (Lassar). Eklund asserts that it is specially common in coachmen.

8. *Aspergillus fumigatus* (Fresenius)—common in pigeons,

causing destruction of the lungs. Causes the pseudo-tuberculosis of the Paris bird fanciers, whose sputa contains the characteristic mycelium. The careless way in which these fanciers live with their stock renders infection very probable.

Blanchard recommends the isolation of all animals suffering from the above diseases, and the destruction of everything with which they have been in contact.

Dr. E. Neisser (Berl. Klin. Wochen, April 4, 1892) reports a case of Chronic Glanders in a man aged 20 years. In September, 1890, a tumor appeared on his left cheek, and by December had developed into a large abscess. A tuberculin cure was then tried, under which the cavity and sinuses healed with astounding rapidity. In January, 1891, purulent otitis and Rhinitis developed, with another abscess on the flexor surface of right forearm. Other similar tumors appeared during the spring on the lower jaw and in the right axilla. Then came ulcerations on the mucous membranes of the gums, with hard and infiltrated edges. The septum nasi became affected, and was perforated, and a thin fœtid secretion appeared. At last the entire visible respiratory mucous membranes were studded with ulcers of varying size; in the deepest ones the subjacent cartilage and bone being markedly affected.

The diagnosis from tuberculosis and syphilis was made by culture and inoculation experiments, and were conclusive. The patient recovered under an energetic iodide of potash treatment.

According to Ballinger the mortality from chronic glanders in the human subject is at least fifty per cent., and not many cases are recorded. Iodide of potash has done good service in the cases of Hallopeau and others.

M. R. Sabouraud has made cultures and experimental inoculations from M. Besnier's recent case of Farcy of the face, with complete success. The experimental proof of the existence of this disease is so simple that it should be employed as a diagnostic aid in doubtful cases. (Annales de Derm., et den Syph., May, 1892.)

M. Bang, professor at the veterinary school of Copenha-

gen, has succeeded in producing a substance, Mallein, which possesses toward Farcy the same properties that tuberculin does as regards tuberculosis. It was tried on 14 horses. Two of them were manifestly glandered; to two others, who had been in immediate contact with them, but who had not as yet shown any sign of glanders, injections of mallein were given; at the end of 24 hours there was a very marked reaction. The autopsy showed glanders of the lungs.

To the ten remaining horses the liquid was also injected; but no reaction followed.

Bang withholds further particulars until more researches have been made. (Letter to E. Besner. Annales de Derm. et de Syph. May, 1892.)

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting of the Keystone Veterinary Medical Association was held at Philadelphia, September 13, 1892. Meeting called to order by the President, Dr. W. Horace Hoskins. Minutes of June meeting were read and approved. The Treasurer reported $14.14 in treasury, with $70 due from members. The Secretary reported that the attendance of members during the year was up to the average of previous years. There was good work done by the Association; some excellent papers, as well as a great number of cases cited, that were instructive. The President made some very pertinent remarks regarding our duty to our Association, to our profession, and to one another. They were to the point and appreciated.

Dr. G. Webster read a paper on "Abortion," as follows:

Synonyms: Slipping, dropping, slinking. When pregnancy is interrupted by the expulsion of the ovum or fœtus, before it has attained sufficient development to live external to its parent, abortion is said to occur; but when the fœtus is expelled before the ordinary period, yet with the organs sufficiently developed to live for at least a time, premature birth

is said to have taken place. In our practice there is no well-defined limit between abortion and premature birth. Abortian may occur at any time during pregnancy, up to within a month of the normal time. It is more often seen during the first half of pregnancy, the ovum often escaping without being noticed by the owner or affecting the health of the animal.

In the later stage, or last few months, after the fœtus has developed to some size, we often have serious trouble, not only in delivering the calf, but also incurring a loss to the owner as a milch cow, she seldom doing so well that season, and is very liable to go through the same performance the next time she gets pregnant. Causes: These are many, and are divided into two classes, (1) sporadic or accidental, (2) enzootic or epizootic. When cases occur here and there, over a wide extent of country, without any relationship as to the cause, they are termed sporadic or accidental. The causes of these are numerous, and may be classified as external and internal causes.

External causes: Atmospherical changes, irregular seasons, sudden changes from hot to cold, or *vice versa.* Many observers have noted that a long-continued cold or hot spell is less productive to this complaint than one wet, cold or frosty night in autumn succeeding a hot day. A very frequent cause is in the food; where the food is of bad quality, not being harvested properly; may be due too to much rich food, causing an accumulation of fat in uterus. I myself had a case only a few weeks ago due to this cause; the fatty matter had accumulated in lower portion of uterus, and had loosened the fœtal membranes from the cotyledons. Bad, filthy water which our cattle are often compelled to drink; drainage water which has stood until it is stagnant. Blows upon the belly from other cattle, or attendants, jamming through narrow passage-ways, being knocked about in transportation, excessive exercise, sudden fright, excitement from being chased by dogs, violent purges.

Internal causes: In some animals there appears to be a tendency to abort more than in others; they do so without

any apparent cause, and without any constitutional trouble being noticed. The most constant internal cause is from some disease of the animal, where she has a high fever for some time, and where there is coughing, viz.: As in bronchitis, pneumonia, pleurisy, tuberculosis, and other diseases where the pain is excessive. A tubercular condition of the uterus I believe is a very frequent cause, as it is often noticed in animals of this class.

Symptoms: The symptoms vary; in some they are so slight as to pass unperceived by anyone, while in others they are very serious. This usually depends upon the time that abortion takes place, whether at first or second stage of gestation. When abortion takes place during the first few months, the cow may appear to the stableman as well as any of his herd up to within a short time of aborting; ofttimes when this trouble happens at night there is no sign the evening before, she eating and drinking as usual; and the owner is often at a loss when finding a calf behind the cows to know to which it belongs, as the mother will take no notice of it whatever, often trampling it under her feet and showing no signs of distress.

If the cow is noticed by an expert the day before dropping her calf he will detect an enlargement of the vulva, with slight falling in of the flanks, and some uneasiness upon the part of the mother; at times a discharge from vulva of a thick ropy fluid; the fœtus will often escape with this fluid. In what is termed the laborous or difficult abortion, which is caused from blows, kick, or hook from other animals, the symptoms are well marked; ofttimes causing a great amount of suffering, depending much upon whether the fœtus is alive or dead. In these cases the veterinarian is called in to see an animal with the history that she is due to calve in two or three months, has been feeding well until a few days before, when he noticed her looking dull and at time uneasy, lying down and getting up, looking around at her sides; from her movements he thinks she has the colic. Upon examination by the veterinarian he will notice a peculiar expression about face and eyes; the pulse is quick, small and hard, respirations

quickened, will give a strain with a groan. At this time he may notice a whitish discharge, which later turns to a yellow or reddish hue; by watching the abdomen he will see the fœtus, if alive, in violent motion. Soon after this we will have the symptoms of a normal parturition, viz.: The uterus begins to contract, the expiratory muscles acting in conjunction therewith. The extent of these labor pains depends much upon the strength of the animal and suddeness of the attack. The first result of the straining is emptying of the rectum and bladder; next dilation of os uteri and protrusion of membranes into the vagina, then through vulva externally. As the water-bag ruptures the pains are excessive and powerful, soon expelling fœtus—sometimes with all the membranes, but oftener they have to be removed by the hand with difficulty. Where the animal is poor and weak external force is often necessary.

Epizootic or infectious abortion: Epizootic or infectious differs much from the sporadic form in affecting whole herds of pregnant animals in one locality, and will occur year after year without any abatement in spite of anything that can be done, and even without finding any cause for the outbreak, thus making it a great scourge to cattle-raisers and farmers. The causes that have been advanced are very conflicting. As long ago as the last century, contagion or infection was believed to be the principal cause of this trouble. It was observed if one cow in a stable aborted the others usually followed suit. In my own practice I have a client who had a fine herd of grade cattle, and knew nothing of this disease, never having anything of the kind in his stable. He went to a drove-yard and bought a fine-looking cow, which, after being on his farm a few weeks, aborted. Within a few months all of his pregnant animals aborted, and have been doing so ever since.

In experiments performed by Franck, of the Munich Veterinary School, it has been established by microscopical investigation that on the lining membrane of the vagina, and that of the vulva, there is constantly found a minute fungus mixed with the mucus, in every respect similar to the leptothrix buccalis, being, in fact, a kind of bacterium.

Toward the period of parturition these bodies become abundant and appear to concur in the decomposition of the fœtal membranes, and their expulsion. Franck has shown that by smearing the vaginal canal of a pregnant animal to a certain depth with this matter from the expelled membranes of one which has been diseased, abortion can be induced.

Symptoms: It is rarely that this form of abortion takes place before the fourth month of gestation; is mostly in fifth and sixth, but may be later. This form of abortion is mostly without any effort or excitement upon the part of the mother, the fœtus mostly still-born. Diagnosis is sometimes easy, but often is very difficult, as we are often asked by owners if such and such a cow is likely to abort, which is very hard, if not impossible, to answer, as she may show no outward signs, but still may abort in a few days. This puts the veterinarian in a position to be condemned, for if he had made his diagnosis correctly at this time it might have been prevented.

Another question asked is, has such a cow aborted? In the absence of fœtus or fœtal membranes it is also hard to answer correctly.

Treatment, preventive and remedial: Preventive is due to knowledge of the cause, if it can be found. First and most important is cleanliness. The shed or stable should be well ventilated and drained, allowing the air to pass through at least two hours every day; should be whitewashed and disenfected after an animal has aborted, so as to kill the germs and smell. The animal herself should be removed from the rest of the herd for three or four weeks; the stableman, after attending to her, should be careful and not go among the other cattle without going out in the fresh air for a while. If a cow shows any sign of aborting she should at once be removed by herself. Abortion can sometimes be prevented if seen early enough by giving narcotics, and keeping perfectly quiet for a few days, giving light, sloppy food. If when we have arrived and found the water bag bursted the only thing that can be done is to give the animal ample time to expel her offspring, which, if we find she cannot do, help must be given. The afterbirth should be removed at once, as it is

easier gotten away at this time, and with less harm to the animal.

A vote of thanks was tendered Dr. Webster for his able paper.

There was a lively discussion on the paper, particularly the part relative to the fatty deposits in the uterus.

The President appointed Drs. Bridges, Goentner and Kooker delegates to the United States Veterinary Medical Association, to be held in Boston, commencing September 20th.

The following officers were elected to serve for the ensuing year: President—R. G. Webster. Vice-President—J. T. Ferley, Jr. Secretary—W. S. Kooker. Treasurer—Chas. T. Goentner.

On motion, the election of Trustees was laid over until next meeting.

Dr. Hoskins introduced the newly-elected officers with appropriate remarks.

Dr. Webster responded, thanking the members for the honor conferred, and hoping each member would do his duty the coming session.

On motion, adjourned.

W. S. KOOKER, Secretary.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

Meeting called to order by President Hoskins. Roll call, 20 members present, as follows: Drs. Collins, Diemer, Dreibellis, Foelker, Gladfelter, Hart, Hoskins, Keelor, Keil, Kooker, Michener, Pearson, Radley, T. B. Rayner, J. B. Rayner, Ridge, Rohn, Shaufler, Smith and Timberman. There were several visitors present, also delegates from New Jersey, Dr. King from the Keystone, and Dr. Eaves of Wilmington, Del.

Minutes read and approved.

An able address was delivered by the President.

The Board of Censors acted upon thirteen applicants. Twelve passing as follows: A. H. Dorney, V.S., Ont., Walter L. Hart, D.V.S. (Am.), V. B. Weaver, George C. Blaker,

D.V.S. (Am.), Charles Harrick, M.R.C.V.S., Francis Allen, M.D.V.S., Jas. C. McNeil, V.M.D., John Doris, Jr., D.V.S. (Ohio), Samuel J. Foelker, V.S. (Ont.), W. G. Benner, V.S. (Ont.), J. F. Fearley, Jr., D.V.S. (Am.), Wm. L. Nunan, D.V.S. (Am.). David Martin laid over until March meeting, as he was not present to appear before the board of censors.

As the Association has been under increased expense this year, owing to printing and prosecutions, etc., the Board of Censors recommended that an assessment of $2.00 per member be made, which was carried.

They also recommended that Dr. Gotleib Myer, of Pittsburg, be expelled for false registration, which was passed.

Dr. J. C. Thompson's letters having been returned to the Secretary, it was found that he had moved to England, his name to be acted upon at March meeting.

The Committee reported the resolutions regarding Dr. Fretz's sudden death.

The Committee on Intelligence and Education reported through Dr. Deimer.

The Committee on Legislation reported through Dr. Kooker.

The Committee on Sanitary Science reported through Dr. S. J. J. Harger.

There was a motion passed advising the Committee on Sanitary Science and Committee on Legislation to act in conjunction with city authorities and others in striving to get a law passed governing inspection of cattle.

The new amendment, calling for a two days' meeting at the annual meeting, was carried.

There was a motion passed to expel a member for non-payment of dues. Which motion being reconsidered, was laid over until next meeting.

Dr. Hart offered an amendment to make yearly dues $2.00, payable half yearly.

The following bills were presented: Dr. Hoskins, $90; Dr. Waugh, $2.50; Dr. Ridge, $39.38.

Dr. Pearson read an essay on "Tuberculosis in Cattle."

Dr. Waugh being absent, his brother demonstrated the manner of casting in operating upon an cryptorchid.

Dr. Bartholomew's paper was not presented.

Dr. J. T. Butterfield was not present, but sent a paper on "Intussusception."

Adjourned to meet in Philadelphia in March.

W. H. RIDGE, *Corresponding Sec'y.*

OBITUARY.

ROBERT WOOD, V.S.

Whereas, Almighty Providence has seen fit to take from among us by death, Robert Wood, V.S., and whereas, he has, as one of the oldest members and organizers of this Association, ever proven himself an estimable gentleman, an earnest, conscientious worker for the elevation of, and a high honor to our profession.

Resolved, That we, members of the United States Veterinary Medical Association, recognize in his death a keen sense of loss to our profession and to this Association. His death touches us still more deeply as a personal friend, whose loss we shall ever deplore, and whose example in life we shall strive to emulate; and

Resolved, That a copy of these resolutions be spread upon the records of our Association, and that copies of the same be furnished to the *Journal of Comparative Medicine*, and the AMERICAN VETERINARY REVIEW for publication.

GEO. BRIDGES, D.V.S.

Whereas, Almighty Providence has seen fit to take from among us by death, Geo. Bridges, D.V.S., and whereas, he has, as a member of our profession and Association, ever proven himself an estimable gentleman, an earnest, conscientious worker for the elevation of, and a high honor to our profession.

Resolved, That we, members of the United States Veterinary Medical Association, recognize in his death a keen sense of loss to our profession and to the Association. His death touches us still more deeply as a personal friend, whose loss we shall ever deplore, and whose example in life we shall strive to emulate; and

Resolved, That a copy of these resolutions be spread upon the records of our Association, and that copies of the same be furnished to the *Journal of Comparative Medicine*, and the AMERICAN VETERINARY REVIEW for publication.

V. T. ATKINSON, V.S.

Whereas, Almighty Providence has seen fit to take from among us by death, V. T. Atkinson, V. S., and whereas, he has, as a member of our profession and Association, ever proven himself an estimable gentleman, an earnest, conscientious worker for the elevation of, and a high honor to our profession.

Resolved, That we, members of the United States Veterinary Medical Association, recognize in his death a keen sense of loss to our profession and to this Association. His death touches us still more deeply as a personal friend, whose loss we shall ever deplore, and whose example in life we shall strive to emulate; and

Resolved, That a copy of these resolutions be spread upon the records of this Association, and the same be furnished to the *Journal of Comparative Medicine* and the AMERICAN VETERINARY REVIEW for publication.

JAMES L. KIDD, D.V.S.

Whereas, Almighty Providence has seen fit to take from among us by death, James L. Kidd, D.V.S., and whereas, he has, as a member of our profession and Association, ever proven himself an estimable gentleman, an earnest, conscientious worker for the elevation of, and a high honor to our profession.

Resolved, That we, members of the United States Veterinary Medical Association, recognize in his death a keen loss to our profession and to this Association. His death touches us still more deeply as a personal friend, whose loss we shall ever deplore, and whose example in life we shall strive to emulate; and

Resolved, That a copy of these resolutions be spread upon the records of our Association, and the same be furnished to the *Journal of Comparative Medicine* and the AMERICAN VETERINARY REVIEW for publication.

POSITION WANTED.

Wanted by a Graduate of the Ontario Veterinary College a situation as assistant to man with general practice. Address "C. M.,"
care Sabiston & Murray, 916 Sixth Ave., New York City.